



Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercising Volume II

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EXECUTIVE SUMMARY

1. BACKGROUND

The mission of the Office for Domestic Preparedness (ODP), Department of Homeland Security, is to develop and implement a national program to enhance the capacity of state and local governments, as well as first responders, to prevent and respond to terrorism events involving Weapons of Mass Destruction (WMD). Since 1998, ODP has developed and administered a training and exercise program to enhance the ability of U.S. cities to respond to terrorist incidents involving the use of chemical, biological, or radiological agents.

The scope of ODP's mission has broadened substantially: demand for domestic preparedness (DP) training has increased dramatically since 9/11 and will continue as the United States faces an ongoing threat of terrorism. In addition, ODP's mission has been evolving as a result of the move from the Department of Justice to the Department of Homeland Security in early 2003 and the subsequent realignment of priorities.

To date, ODP has presided over an exercise program that delivers exercises face-to-face (F2F) using contractor teams. These exercises are costly and require a fairly long lead time to set up. ODP-sponsored training is predominantly F2F classroom or live event training, with some distance learning. Given the heavy reliance on F2F delivery, the current demand for such training and exercising (T&E) far exceeds existing program capacity.

ODP would like to offer local communities a broader array of T&E options, covering a much wider choice of costs, staffing levels, and resources. ODP contracted with ThoughtLink, Inc. to review existing models, simulations, and games (MS&G) to research whether current off-the-shelf products could be used in the ODP T&E program. These products range from low-cost single-user computer games, to distributed collaborative environments for senior decision-makers, to complex programs simulating the movement and allocation of thousands of resources.

ThoughtLink was tasked to evaluate MS&G products for use in ODP's training and exercise program. This considerable task includes: identifying ODP T&E

requirements, reviewing related T&E initiatives, conducting three rounds of product evaluations, and identifying a strategy for selecting and using MS&G products. The final report will be a roadmap/strategy document outlining how the evaluated MS&G products might augment or support ODP's training and exercise program. Currently available government- and commercially owned products will be evaluated; however, where necessary, ThoughtLink will identify areas in which new products are needed to fulfill ODP's requirements.

The challenges for ODP, and thus for ThoughtLink, in developing a more robust DP T&E program include:

- The inclusion of both training and exercising, which often have different goals and different means to accomplish those goals.
- The training audience is broad, covering about eleven functional areas, from Fire, to Public Works, to Public Information.
- A wide range of T&E proficiency levels must be supported, from basic to advanced, from initial acquisition to refresher training or exercising.
- An exceptionally wide geographic area is included: the entire country plus U.S. territories, covering small towns as well as large urban cities.
- The focus is on existing products vs. products custom-designed to fit ODP needs.
- T&E must address multiple WMD threats having different T&E requirements.
- DP T&E requirements are continually evolving, as evidenced by ODP's current work on defining terrorism prevention tasks and associated T&E requirements for those tasks.

To aid in addressing these challenges, ThoughtLink leverages recent work in the DP area, including Pelfrey, Kelly, and May, 2001; ODP Emergency Responder Guidelines, 2002; Homeland Security Exercise Evaluation Program (HSEEP) Vol. I Draft, 2003; and Federal Emergency Management Agency (FEMA) Assessment of Federal Terrorism Preparedness Training for State and Local Audiences, 2002. In addition, MS&G are increasingly used across government agencies; some of these MS&G are dual-use products with both commercial and government applications. MS&G developed for other government agencies and commercial applications may be applicable to ODP needs.

The initial phase of the ThoughtLink project focused on an evaluation of ODP's T&E program and identified the associated T&E requirements (documented in Agrait, Evans, Grossman, Hammell, Loughran, and Stahl, 2003a).

2. DOCUMENT PURPOSE

This document describes the second round of product evaluations; it is a snapshot of work in progress. The process of product evaluation is evolutionary – it has changed and will continue to change from round to round. Results contained in this report should be considered tentative until the conclusion of this effort, when all product evaluations will be reviewed for rating consistency. An earlier report - Agrait, Evans, Grossman, Hammell, Loughran, Stahl, 2003b, referred to as Volume I - described the methodology for the evaluation in detail and its application to the first 17 products reviewed. This report, Volume II, describes minor changes in implementing the methodology. It then describes the 45 products reviewed in this second round of evaluations and analyzes the relationship between the 45 products' characteristics and ODP T&E needs. It also analyzes other product characteristics since there are many factors beyond T&E requirements that ODP will want to consider, such as staff requirements, time and cost to adapt to ODP needs, After Action Review (AAR) capabilities, etc.

This document does not compare products against each other. In Volume III of the product evaluations (March 2004) and in the final roadmap report (April 2004), ThoughtLink will present the larger picture, showing the universe of products evaluated relative to ODP T&E needs, and will indicate which ODP needs are covered and which are not. That final report will identify useful product categories and present information to help ODP select specific products from those categories; however, ThoughtLink will not recommend specific products. The final report will also include recommendations for the overall ODP T&E program, beyond MS&G considerations.

3. METHODOLOGY

ThoughtLink has developed a flexible framework that can change and expand over time, since T&E requirements will evolve (e.g., prevention tasks are being added to the ODP mission). In addition, the approach accommodates a wide variety of products, and supports evaluation at the appropriate level of detail that enables analysis, without becoming overwhelmed by requirement details and disparate features of products.

ThoughtLink started with the well-established Instructional Systems Development (ISD) process, extensively used by the U.S. military and civilian agencies, and adapted it for the unique features of this task (notably that the process considers existing MS&G, or media as they are also referred to, vs. custom-designed solutions to T&E needs).

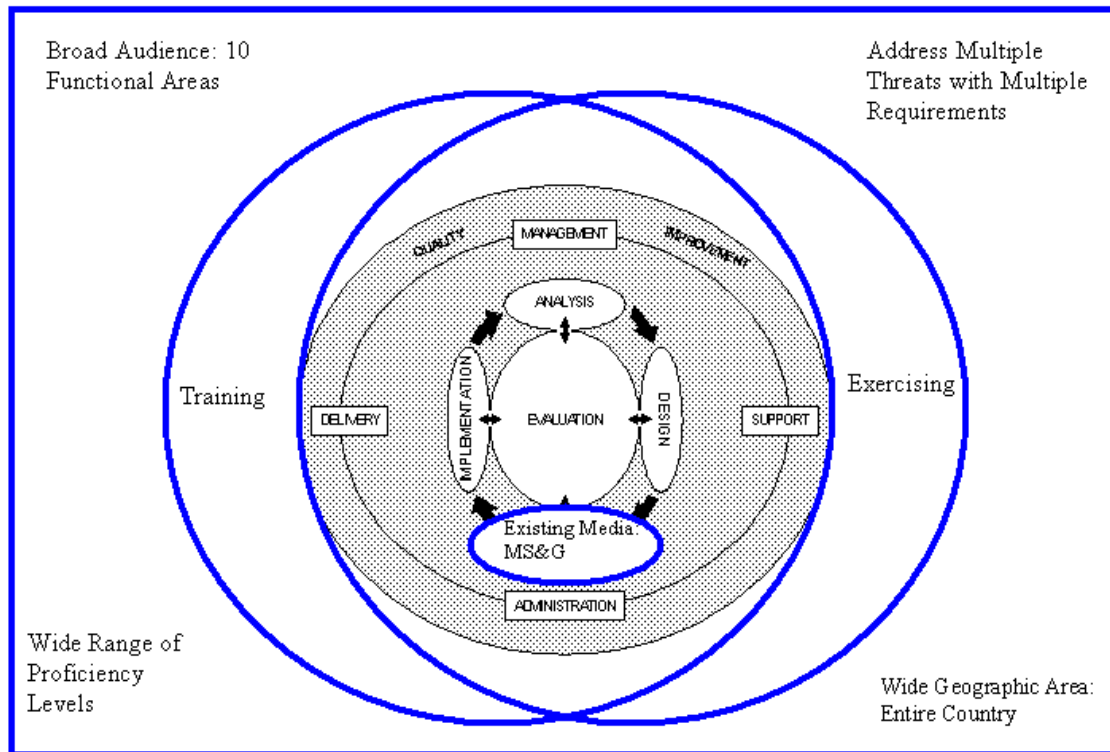


Figure ES-1. Tailored ISD Process

A key tool used in the process is Rational RequisitePro (RRP), a requirements management software application designed to support the definition, tracking, and analysis of requirements. This product allows ThoughtLink to import requirements from various sources and track that sourcing; associate custom-defined attributes with requirements; and link requirement attributes to product attributes.

The primary steps in the methodology are to:

1. **Develop high-level requirements and strategy categories for ODP T&E –**
In an ongoing process throughout the three rounds of evaluations, T&E requirements are collected from authoritative sources including those mentioned above. These hundreds of requirements are grouped into similar categories. Selected T&E strategy elements (such as the need for individual training or team training) define the categories. All categories, all requirements, and the mapping of requirements to categories are captured in the RRP database. In addition, the original requirement source documents are also accessible in the RRP database. Since the first round of product evaluations, the number of requirements has increased from about 800 to over 1100 and the number of T&E categories has grown from 20 to 49.

2. **Review products** – ThoughtLink identified key attributes to consider in the product evaluations and created a template to use in the evaluation. This template has changed slightly between the first and second rounds. Each ThoughtLink team member evaluated several products, writing narrative descriptions of products. (One-page descriptions of each product can be found in Section E.) Next, to facilitate analysis, ThoughtLink created Microsoft Excel spreadsheets of numeric data, where rows are products, columns are attributes, and cells contain ratings of the extent to which a particular product, in its current form, fulfills that attribute.
3. **Analyze products** – This proceeded on several fronts. One key part of the analysis was to identify the relationship between product attributes and T&E needs. ThoughtLink developed a set of attributes that distinguish the 49 T&E categories and coded each product for these attributes. That allows ThoughtLink to generate a matrix comparing T&E needs to existing product capabilities. However, this does not completely characterize the possible utility of a product. Thus, additional analyses consider other useful product attributes, e.g., whether the product has automated feedback, subjective assessments of face validity, and ease of use, etc.

4. FINDINGS AND RESULTS

The goal for this round of product evaluations was to continue to refine the requirements database and the analytic framework and to complete evaluations of an additional 45 products. It is important to note, however, that this report is an interim deliverable, and the final results of ThoughtLink's analysis will be included in both Volume III and the final deliverable in April 2004.

Key accomplishments since the delivery of the first product evaluation include:

Continued consolidation of T&E requirements from multiple sources – A significant part of the work supporting this task has been devoted to gathering requirements and creating categories, then storing that information in RRP. New requirement source documents and new requirement categories have been identified since the first round of product evaluations. The consolidated set of requirements identified in this report will be a foundation for future evaluations. It will also be useful to other ODP projects.

Fine-tuning the flexible methodology for the review process – ThoughtLink has created a flexible framework for subsequent evaluations that can easily be modified to accommodate the inevitable changes as ODP's mission continues to evolve, new requirements are identified, and new products are evaluated.

Although findings from the product evaluations are preliminary, a few results are worth noting at this time; these findings (described below) may influence future product selection and analyses.

Few products well-suited for awareness training – In both rounds of product evaluations, relatively few products surveyed were deemed appropriate for WMD awareness training. Though this may be a function of product selection and analysis, observations of ODP’s T&E program also indicate a need for more widespread awareness training and a lack of documentation of awareness-level requirements.

Lack of government administrator and public safety communications-specific requirements – Out of 572 requirements that are specific to a particular functional area, the requirements consolidation process has thus far yielded only three requirements exclusive to public safety communications and nine requirements exclusive to government administrators. More T&E requirements for these functional areas may exist but have not yet been documented.

Uncertain ownership of some products – At the time of this report, ownership of some products developed under federal sponsorship was uncertain. This may imply that the process of acquiring or licensing these products, if desired, could be lengthy and complicated.

Cost issues – Cost estimates have considerable uncertainty: accurate, comparable cost information is difficult to obtain; some costs will be recurring (vs. initial acquisition costs); and some products require licensing of third-party components. In addition, many of the products would need modification for use by ODP, and vendors are unable to quote prices without a specification of requirements for the changes.

5. NEXT STEPS

Volume III, documenting the third and final round of product evaluations, is scheduled for completion in March 2004. The project will culminate in a strategy document covering product evaluations, selection of products and T&E strategy, recommendations for ODP’s T&E programs, and a “roadmap” for the way ahead. The roadmap document will be completed in April 2004.

The final report will also include recommendations for the overall ODP T&E system, beyond MS&G considerations. T&E needs are not completely met by media. Media are one piece of a larger system that encompasses an adaptable program strategy capable of anticipating and meeting needs via continuous people and technology inputs.

According to David McIntyre in “Education for Homeland Security – The Critical Need,”¹ “To secure our homeland...a rigorous, sequential, and progressive program of professional education in homeland security is essential. This program must be created, virtually from scratch, and it must consist of at least three parts: a new curriculum, a new, structured program, and new means of delivery.”

Volume III of the product evaluations, together with the final report, will contain recommendations addressing major aspects of the ODP T&E system, including the following:

- **Training and exercise requirements** – A consolidated list of all T&E requirements identified during the two years of this project will be included, grouped into categories. These will provide reinforcement, where appropriate, to current training and exercising initiatives and will provide guidance for future developments.
- **Training and exercise MS&G products** – Categories of MS&G to support and enhance the ODP T&E system will be recommended. Although ThoughtLink will not recommend specific products, factors to consider when selecting specific MS&G products will be presented.
- **Training and exercise strategies** – Specific T&E strategies based on the instructional strategy elements identified and reviewed with regard to the requirement categories and media will be discussed.
- **The overall ODP training and exercising program** – This will include recommendations for incorporating technology-based training products into existing training and exercise offerings and recommendations for enhancements to the program.
- **A roadmap for the way ahead** – Recommendations about the preceding elements will be presented in terms of an overarching T&E system structure that integrates the elements, conceptually as well chronologically.

¹ Original article in ETS News, Winter 2002-2003, GDR Ltd., UK; “reprinted” in http://www.homelandsecurity.org/HLSCommentary/Education_for_Homeland_Security.htm accessed on 12/19/02.

A. OVERVIEW

1. PROJECT BACKGROUND

“The Homeland Security Act of 2002 transferred ODP from DOJ to the Department of Homeland Security (DHS) and assigned it ‘the primary responsibility within the executive branch of government to build and sustain the preparedness of the United States to reduce vulnerabilities, prevent, respond to, and recover from acts of terrorism.’ While ODP has been at the forefront of homeland security preparedness since 1998, the assignment of expanded responsibilities broadens its constituency from an exclusively state and local focus to now include federal departments and agencies, tribal governments, the private sector and international entities. In addition to continuing its priority of direct and specific support to state and local homeland security professionals, ODP will now also provide general all-purpose support to all levels of government with the homeland security arena.”²






ODP’s current approach to training and exercising (T&E) relies primarily on face-to-face collocated events and is resource intensive in terms of time to design and prepare an exercise and the amount of manpower required for execution. This approach may not be able to adequately address the expanding demand for domestic preparedness (DP) T&E. ODP realized that information technologies, in the form of models, simulations, and games (MS&G), could help extend the reach of the program and provide the states additional tools for dealing with WMD. ODP wanted an assessment of which MS&G products matched the specialized requirements for training and exercising for prevention and response to WMD incidents. ThoughtLink, Inc.³ was hired to conduct a requirements analysis and product evaluation and to develop a road map to present the future vision for ODP training and exercising.



² Homeland Security Exercise and Evaluation Program, Volume I: Overview and Doctrine, U.S. Department of Homeland Security, Office for Domestic Preparedness, March 2003.

³ ThoughtLink is a small consulting firm with experience in simulations, collaboration technologies, and assessing the effectiveness of games for training applications.

The following table identifies ThoughtLink's specific tasks under this project, the deliverables associated with each task, and the current task status.

Table 1. ThoughtLink Tasks, Status, and Associated Deliverables

Status	Task and Deliverables
	Review archived exercises and the current ODP exercise program
	<ul style="list-style-type: none"> • Mar 03 – <i>ODP Exercise Program Review: Opportunities for Models, Simulations, and Games</i>
	Analyze the training and exercise requirements for all levels of domestic preparedness spectrum of command from first responders to senior managers at the local, state, federal, and international levels
	<ul style="list-style-type: none"> • Mar 03 – <i>ODP Exercise Program Review: Opportunities for Models, Simulations, and Games</i> • May 03 – <i>Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercise - Vol. I</i> • This task will continually evolve and results may be documented in future reports
	Evaluate GOTS and COTS games and simulation products and critique candidate products for ODP use
	<ul style="list-style-type: none"> • May 03 – <i>Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercise - Vol. I</i> • Oct 03 – <i>Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercise - Vol. II</i> • Report planned for Mar 04 – <i>Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercise - Vol. III</i>
	Conduct surveys of current and near-term related training and exercise initiatives in related domains
	<ul style="list-style-type: none"> • Report planned for Jan 04
	Analyze the effect of the recommended games and simulations on ODP exercise training strategy and identify how the ODP exercise program would be affected, including the development of a gaming and simulation roadmap for the way ahead
	<ul style="list-style-type: none"> • Report planned for April 04

Symbol	Key
	Concluded
	Ongoing

To date, ThoughtLink has reviewed the current ODP exercise program, as well as selected prior exercises conducted from 1997-2000 under the Nunn-Lugar-Domenici exercise program. One major focus of the review was a series of 105 interviews conducted with exercise planners and participants, as well as with ODP staff, contractor teams, and various local, state, and federal officials. The exercise review helped to identify exercise program requirements and objectives. Results are documented in Agrait, Evans, Grossman, Hammell, Loughran, and Stahl, 2003a.

To date, two reports address the third task in Table 1: evaluate government-owned and commercial-owned games and simulation products; and critique candidate products for ODP use. The product evaluation was partitioned into three rounds to increase the timeliness of the information provided to ODP. Agrait, Evans, Grossman, Hammell, Loughran, and Stahl, 2003b describes the evaluation methodology and the results of its application to 17 products in the first round of evaluations.

This report documents the second round of product evaluations. It is important to note that the process of product evaluation is evolutionary – it has changed and will continue to change from round to round. Results contained in this report should be considered tentative until the conclusion of this effort, when all product evaluations will be reviewed for rating consistency. The report begins with a summarization of the methodology supporting all three product evaluations and describes changes in its implementation since the first round. It then describes each of the 45 MS&G products reviewed in this round of the evaluations, the attributes by which products were evaluated, and how the products map to ODP training and exercise requirements. Product characteristics are described, such as intended T&E audience and functional areas supported (e.g., law enforcement or medical).

Note: This document does not rank individual MS&G products against each other. Ultimately, the results from this project, to be documented in Volume III of the product evaluations and the final deliverable, will describe categories of MS&G products (e.g., virtual simulations for large multi-functional teams) that can assist ODP's T&E programs and will discuss attributes to consider when choosing a specific product within a given category.

The final deliverable for this task, scheduled for April 2004, will be a road map outlining how MS&G can support the increased demand for WMD preparedness training and exercises; suggestions for how and when to use MS&G; and recommendations for effective T&E strategies. The April 2004 report will consolidate the three rounds of

product evaluations to identify MS&G suited to a variety of needs, from augmenting the current ODP exercise program to filling unmet T&E needs. Key factors to consider when choosing among specific products within a particular MS&G category will also be discussed.

In addition, the April 2004 report will address ongoing training and exercise initiatives in related domains and being conducted by government agencies and commercial industries.

2. STRUCTURE OF THIS DOCUMENT

The work described in this report includes the continuing process of collecting requirements, a review of 45 additional MS&G products, fine-tuning the methodology to evaluate those products, and an interim analysis of the product characteristics. The report includes the following topics and sections:

Section B – Requirements and Product Evaluation Methodology

This section describes the structured process used to evaluate the MS&G under consideration and discusses the key analysis tasks for this project.

Section C – Requirements Extraction and Categorization

This section describes the grouping of requirements and strategy elements into T&E categories. Illustrative analyses are shown, using the various attributes by which requirements can be coded and queried.

Section D – Review of Training and Exercise Products

This section illustrates the kinds of analyses developed from the MS&G evaluations and links products to T&E categories. Groupings of products along various dimensions, such as media type, and functional area supported, etc., are described. The linkage between product capabilities and ODP's T&E requirements is illustrated and discussed.

Section E – Product Summaries

Brief one-page descriptions of each of the 45 products are found in this section.

Section F – Summary

This section recaps the work completed in this phase of the project – refinement of the evaluation methodology and results of its application. The next steps on the project are described.

B. SUMMARY OF METHODOLOGY

This section addresses the methodology used to categorize T&E requirements and evaluate MS&G products.⁴ This includes the development of a database identifying responder and decision-maker activities that may be achieved by training and/or exercising and relating the activities to recommended instructional strategy attributes for effective achievement. This section also outlines the methodology used to review MS&G products, with regard to a common set of attributes.

The project needed a systematic process for identifying training and exercise requirements relevant to ODP and for mapping these requirements to potential MS&G products. The process selected is a variant of the Instructional Systems Development (ISD) process, adapted to accommodate some of the unique T&E challenges presented to ODP. These challenges consist of the inclusion of both training and exercise requirements, a range of T&E proficiency levels, an exceptionally wide geographic area, and a media emphasis on existing MS&G technology rather than custom-designed products. Additional detail on the ISD process and our adaptation of it can be found in Agrait, et al., 2003b.

The challenge is to perform an analysis that considers these factors, within a reasonable time frame, and that will yield meaningful results to guide the use of MS&G in ODP's T&E process. Implementation of the methodology proceeds on two tracks – collecting data in great detail about individual products and requirements while performing the analysis at a higher level. This will yield system-wide macro-level conclusions and recommendations while maintaining the native detail in the database for later probing analyses requiring greater resolution.

The focus of this project is primarily on the T&E media (i.e., MS&G), specifically evaluating the viability of commercial and government-owned technologies to support ODP T&E delivery. To successfully evaluate MS&G products, the project must focus on identified training and exercising requirements. These are necessary for

⁴ The terms MS&G, media, products, and tools are used interchangeably to mean those artifacts being evaluated to possibly enhance ODP's T&E program.

understanding media requirements and also to provide direction for potential application of specific MS&G products. Finally, the project must also consider the potential instructional strategies (i.e., including exercise strategies) to be employed using the media. Design of the media and instructional/exercising strategy components of the T&E system go hand-in-hand; each is dependent on the other.

The project's primary focus, therefore, is on the T&E requirements; T&E media (MS&G); and T&E strategies. This focus is illustrated in Figure 1, showing the media and strategies stemming from the requirements being analyzed simultaneously and being interrelated.

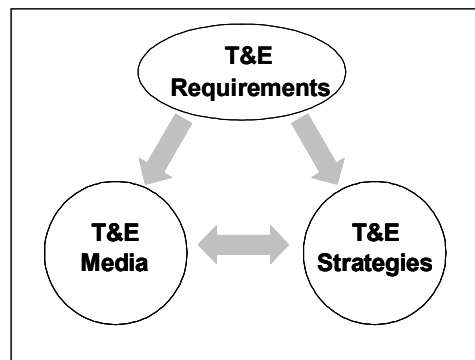


Figure 1. Interrelationship Among Requirements, Media, and Strategies

1. ANALYSIS TASKS

Figure 2 provides a flow diagram of the major MS&G product analysis tasks. As can be seen in the figure, this effort began with tasks 1 and 2 conducted in parallel. At the current time, work is being performed on all tasks. These tasks, which are being continuously refined, are:

1. **Compile T&E requirements** – Behavioral items⁵ representing the requirements of ODP training and exercising were compiled from multiple source documents⁶ and placed into requirement categories, with the categories representing major elements of recommended T&E strategy.
2. **Review media** – Lists of commercial and government-owned MS&G products have been compiled for potential evaluation; 17 of these were

⁵ The collection of learning objectives, performance objectives, skills, knowledge, and other behavior-related statements indicative of responder and decision-maker training and exercising requirements. Terms are used interchangeably throughout this report.

⁶ See Appendix A for a complete listing of requirement sources.

reviewed during the first round of evaluations and 45 in the second round. This task will continue for the duration of the project, with additional media identified and reviewed.

3. **Link strategy attributes with T&E requirement categories** – Potentially relevant training and exercising strategy attributes, in addition to those used to define the requirement categories, were identified and added to the requirement categories. This provides refinement of the recommended T&E strategies and provides a basis for linking the requirement categories with the MS&G media.
4. **Link media with the strategy attributes and T&E requirement categories** – The MS&G media were similarly evaluated with regard to the T&E strategy attributes, as well as other factors potentially important to their use in ODP T&E.
5. **Research related initiatives** – Many government agencies and universities have ongoing research programs, which, though they might not have immediate results applicable to ODP today, may yield results in the future. These initiatives are reviewed on an ongoing basis, for the most part independently of the other tasks, though our assessments of an initiative's relevance to ODP needs are informed by the analysis of T&E requirements and strategies. Occasionally these initiatives highlight additional MS&G products for future review.
6. **Develop T&E system recommendations** – The T&E strategy attributes, and the results of tasks 3 and 4, provide the common basis for linking the MS&G media with the T&E requirement categories. Analysis of these relationships (i.e., MS&G media and T&E requirements) is ongoing and will form the basis for generation of the T&E system recommendations. The final deliverable will be a proposed roadmap and T&E strategy that describes how to best incorporate MS&G into the ODP program.

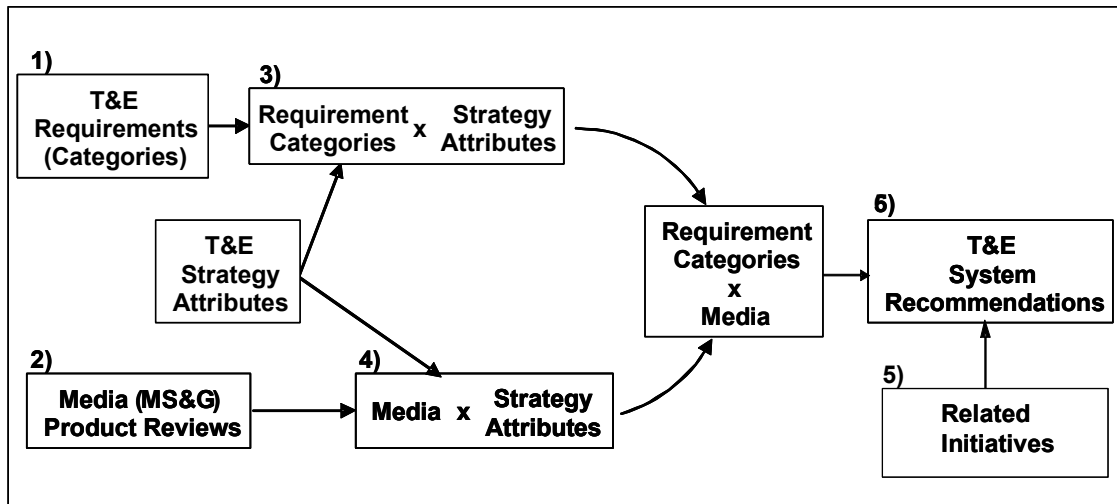


Figure 2. Analysis Tasks

The next section of this document, Section C, describes the collection of requirements and the refinement of requirement categories subsequent to publishing Volume I. Product evaluation is covered in Sections D and E.

C. REQUIREMENTS EXTRACTION AND CATEGORIZATION

ThoughtLink has continued to develop a comprehensive set of WMD T&E requirements. The development of the requirements database, and its use, is described in the earlier report, Agrait, et al., 2003b. The requirements database is currently in Microsoft Access format and has been generated through the use of Rational Requisite Pro (RRP), an IBM data management software product.⁷

This section discusses the continuous refinement process of our collection of requirements from multiple sources⁸ into a single, searchable comprehensive set that spans responder levels (from the first responder to high-level decision-makers and federal officials), that spans functional areas/disciplines, and that specifies the preferred T&E strategy (e.g., student level and level of proficiency) and other parameters.

Beyond its utility for this project, the database can be useful to a variety of users and other ODP projects, for requirement inspection and media selection. As new requirements are developed, it is important to add them to the database. Similarly, as new relevant MS&G products are developed and evaluated, they should be incorporated into the database.

1. ATTRIBUTE REFINEMENT PROCESS

For the purpose of this effort, requirements are defined as T&E system characteristics necessary to meet ODP's preparedness needs in the area of WMD. The foundation of our requirements categorization is a relational database containing T&E requirements, the source documents from which they came, and attributes associated with each requirement. The same attributes associated with requirements are also assigned to MS&G products. After each MS&G product is reviewed, it is added to the database along with its various attributes. The use of a common set of attributes allows products and requirements to be related to each other and provides a convenient way for searching the database. See Appendix B for attribute definitions.

⁷ For more information on RRP see Agrait, et al., 2003b.

⁸ See Appendix A for a complete listing of requirement sources.

For example, consider the following requirement:

Demonstrate skill and knowledge in preparing hazard and risk analysis of potential WMD targets in the local community.

Characteristic attributes of this requirement are shown in bold in the table below:

Attribute	Attribute Choices
Student/Participant Unit	Individual , Group, Team, Multi-agency Team
Student/Participant Level	Basic, Intermediate, Advanced
Content	Knowledge, Applied , Hands-On
Environment	Generic, Locale Specific
Applied Context	Equipment, No use of equipment

During the course of this project, T&E requirements continue to be compiled from selected sources. Requirements and new source documents are imported to the database through the use of RRP. It is expected that the number of source documents will continue to increase as more documents are made available (e.g., new Presidential directives), thus possibly increasing the number of requirements.

ThoughtLink's approach to managing the large number of requirements is to bundle individual requirements into higher-level requirement categories. This preserves the lowest level of detail (individual requirements that can be mapped back to their source document) while allowing the analysis to proceed at an aggregated level (requirement categories). To create the requirement categories, we determined attributes that would distinguish requirements from each other; would incorporate elements of instructional strategy; and would be meaningful from a pragmatic T&E standpoint.

Using requirement categories facilitates the evaluation of media and strategies by allowing media and strategies to be compared to a relatively small number of requirement categories vice hundreds or thousands of individual requirements. The parallel inspection of common attributes between requirements and MS&G allows users to keep up with the changing requirements and with the available T&E media for training and exercising.

Since Volume I was published, new requirements have been added to the database and the requirement categories modified. This process will continue through, and potentially beyond, April 2004. The number of requirements has grown from nearly 800 at the time of the Volume I report to over 1100. The number of requirement categories has also increased, from 20 to 49. See Agrait, et al., 2003b for a more detailed explanation of the requirements, attributes, attribute choices, and requirement categories.

There have been two changes to the coding of requirements since Volume I was finished. The first change is adding Multi-Agency Team to the possible values assigned to the attribute Student Unit. This additional choice recognizes distinct T&E requirements associated with multi-agency teams vice other single-agency teams. The attribute is Student Unit and the possible choices included are now Individual, Group, Team, and Multi-Agency Team.

The second change to coding of requirements is to add an additional attribute choice to Student Level. The initial choices were Basic and Advanced, and now an Intermediate attribute has been added to further delineate the responder's level of T&E. The addition of this attribute choice will make the requirements more meaningful to the user. In the future, the database could potentially be made available to T&E planners. They could select a subset of T&E requirements relevant to their needs and then view the MS&G products that are appropriate for that category. For example, a database user could select the requirements associated with Basic level T&E, for Law Enforcement, for Biological Incidents. Those same attributes (Basic T&E, Law Enforcement, Biological Incidents) could also be queried for MS&G products that match those requirements.

2. CONTENT OF CURRENT REQUIREMENT CATEGORIES

At the time of this report, over 1100 unique requirements have been extracted and tagged with appropriate attributes (and placed in one of the 49 requirement categories). The category tables below show the attributes by which the requirements were grouped together (bold-faced items denote categories for exercise requirements; non-bold items denote categories containing training requirements). Definitions for these attributes are provided in Appendix B. Example observations regarding attributes are discussed in sections 2a.-2e. below. The accompanying graphs were produced in RRP.

Table 2. Requirement Categories, with Their Defining Attributes

Requirement Category	Student/ Participant Unit	Student/ Participant Level	Content	Environment	Applied Context
A	Individual	Basic	Knowledge	Generic	NS
AA	Individual	Intermediate	Applied	Locale	NS
B	Individual	Basic	Knowledge	Locale	NS
BB*	Individual	Basic	Applied	Generic	Equipment
C	Individual	Basic	Applied	Generic	NS
CC*	Individual	Intermediate	Hands-On	Generic	Equipment
D	Individual	Basic	Applied	Locale	NS
DD	Individual	Intermediate	Applied	Generic	Equipment
E	Individual	Advanced	Knowledge	Locale	NS
EE*	Individual	Basic	Applied	Locale	NS
F	Individual	Advanced	Knowledge	Generic	NS
FF*	Individual	Advanced	Applied	Generic	NS
G	Individual	Advanced	Hands-On	Generic	Equipment
GG	Team	Advanced	Applied	Locale	NS
H	Individual	Advanced	Applied	Locale	NS
HH	Team	Intermediate	Applied	Generic	Equipment
I	Individual	Advanced	Applied	Generic	NS
II	Team	Intermediate	Applied	Generic	NS
J*	Individual	Advanced	Applied	Locale	NS
JJ*	Multi-Agency Team	Basic	Applied	Locale	NS

K*	Individual	Advanced	Applied	Generic	Equipment
L	Team	Basic	Applied	Generic	NS
LL	Team	Intermediate	Applied	Locale	NS
M	Team	Intermediate	Hands-On	Generic	Equipment
MM	Multi-Agency Team	Intermediate	Applied	Locale	NS
N	Multi-Agency Team	Intermediate	Applied	Generic	NS
N2+	Multi-Agency Team	Advanced	Applied	Generic	NS
NN*	Multi-Agency Team	Advanced	Applied	Locale	NS
O	Team	Advanced	Applied	Generic	NS
O2+	Multi-Agency Team	Advanced	Applied	Locale	NS
OO*	Team	Basic	Applied	Locale	Equipment
P	Individual	Intermediate	Knowledge	Generic	NS
PP	Individual	Basic	Applied	Generic	Equipment
Q*	Team	Advanced	Applied	Locale	NS
Q*2+	Team	Advanced	Applied	Locale	Equipment
R	Team	Advanced	Hands-On	Generic	Equipment
S*	Team	Intermediate	Applied	Locale	Equipment
SS2+	Multi-Agency Team	Intermediate	Hands-On	Generic	Equipment
T	Team	Advanced	Applied	Generic	Equipment
T2+	Multi-Agency Team	Advanced	Applied	Generic	Equipment

TT*	Team	Basic	Applied	Locale	NS
U	Individual	Intermediate	Knowledge	Locale	NS
UU*	Team	Basic	Applied	Generic	NS
V	Individual	Intermediate	Applied	Generic	NS
VV	Team	Basic	Applied	Locale	NS
W	Individual	Basic	Hands-On	Locale	NS
Y*	Team	Advanced	Hands-On	Generic	Equipment
Z	Individual	Intermediate	Hands-On	Generic	Equipment
ZZ	Team	Intermediate	Hands-On	Generic	NS

NS: no use of equipment

a. Media Scale

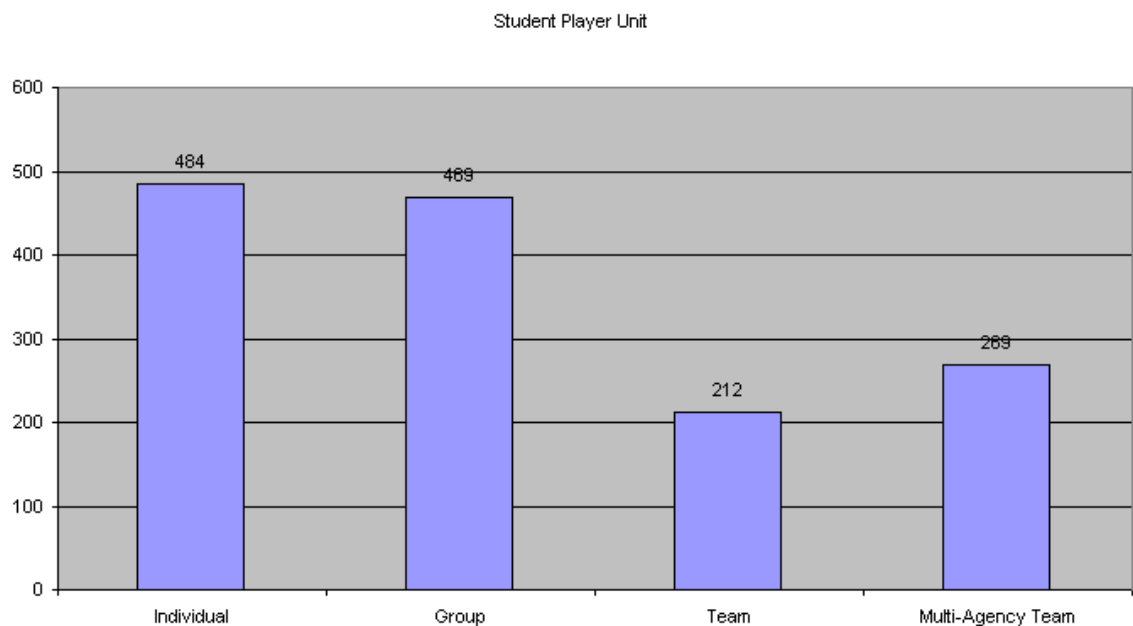


Figure 3. Student/Participant Unit Requirements

Figure 3 depicts the number of requirements imported into RRP to date, organized by the student/participant unit attribute. There is great overlap in requirements that can

be trained/exercised individually and in groups. This has cost implications as it is generally less costly to train/exercise more than one participant at a time.

b. Student Level

The Student Level attribute is not easily defined because of inconsistencies in definitions and requirement categorizations from the various source documents. We have consolidated several definitions to arrive at the most comprehensive distinctions between these levels.⁹ Since Volume I was published, we have added an Intermediate proficiency level category (with 246 requirements), containing about as many requirements as the Basic level unit (263).

This attribute is meant to serve as a user guide when considering T&E (e.g., clearly mastery of basic tasks should be accomplished before attempting more difficult tasks); but we recognize that there may be differences in the way the response communities characterize their requirements (e.g., different groups or communities may define intermediate in various ways). Nonetheless, the flexible search capability of the requirements database will allow users to plan their preferred course/exercise progression.

As was found in Agrait, et al., 2003b, the consolidated requirements list continues to include many more advanced level items than basic level items: 263 basic, 246 intermediate, and 689 advanced.

c. Environment

The Environment attribute specifies whether or not requirements need to be trained or exercised in (or depict) a specific geographic location. Generic specifies activities that do not need to occur in or depict a specific geographic location; Locale-Specific denotes activities that require T&E to occur in a specific location or reflect actual community resources. There are 461 Generic requirements and 505 Locale-Specific requirements. This is consistent with the findings from Volume I; there continue to be more Locale-Specific requirements than Generic. This is likely to be due to the strong emphasis not only on learning requisite knowledge, skills, and abilities, but also on being able to apply them to the particular community. However, even though Generic

⁹ See Appendix B for a listing of attributes to date and their definitions.

products may not replicate the exact terrain or cultural features of a particular area, these products can often be customized to simulate actual response units in a particular region.

d. Content

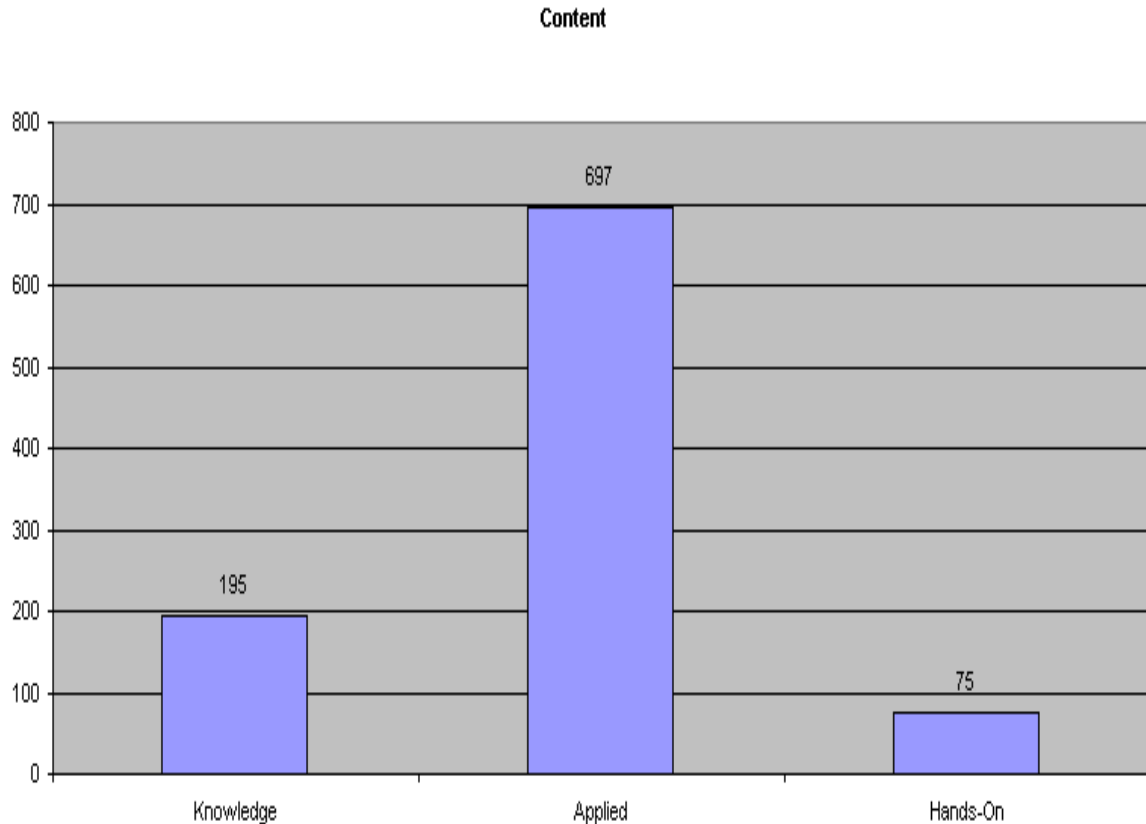


Figure 4. Content

The Content attribute consists of three categories: Knowledge, Applied, and Hands-On. As Figure 4 depicts, there are clearly more applied requirements than those that only entail knowledge or those that necessitate hands-on activities. This finding has implications for both T&E media and strategies, which may differ substantively between these T&E content modes. More discussion of optimal instructional strategies will be found in the final roadmap volume, to be delivered to ODP in April 2004.

e. Functional Area-Specific Requirements

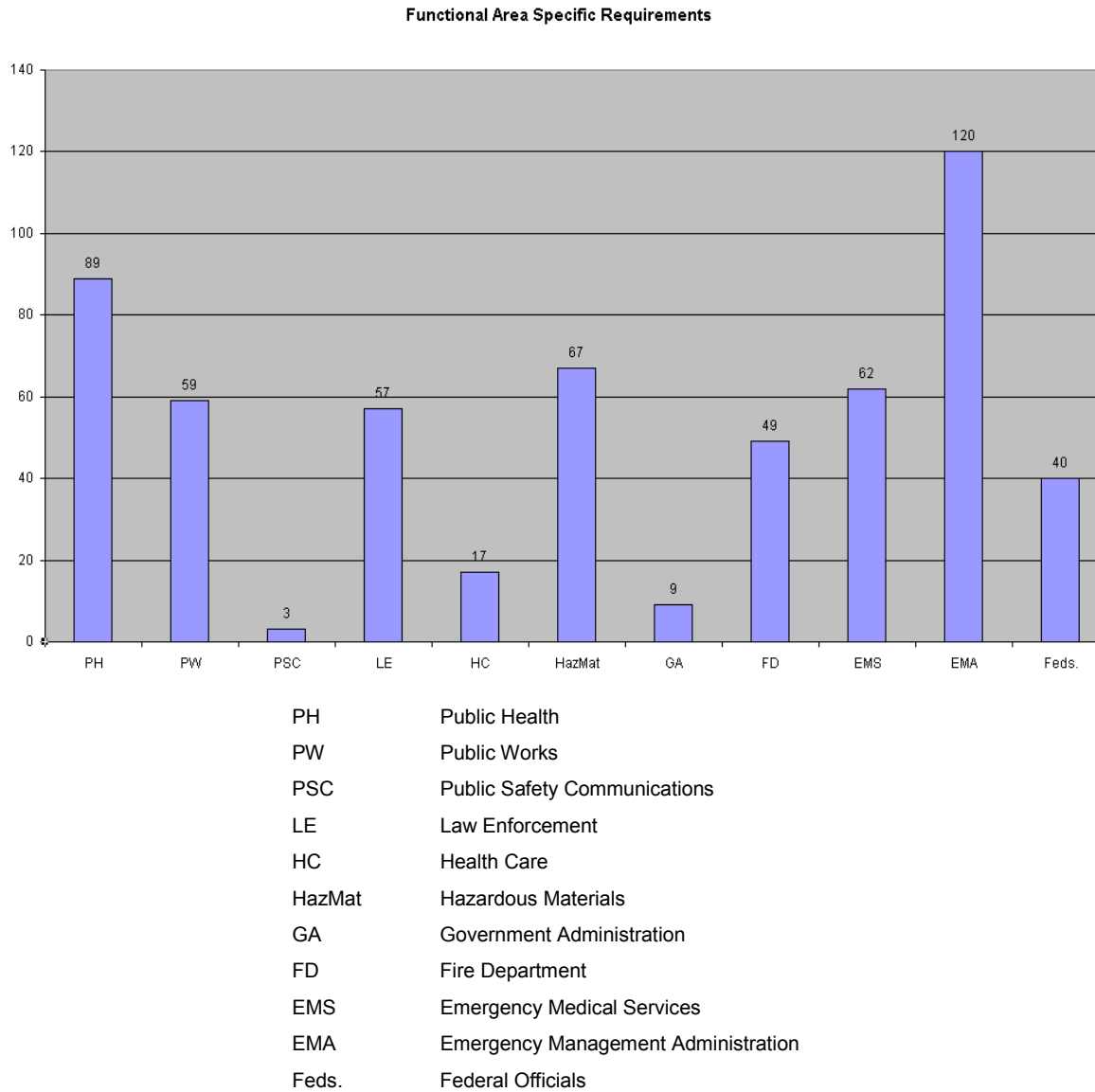


Figure 5. Functional Area-Specific Requirements

Figure 5 shows the breakdown of 572 T&E requirements that are *unique* to a functional area. The remaining requirements are not exclusive to a particular response discipline and/or functional area.

As previously reported in Agrait, et al., 2003b and shown above, there is an apparent lack of WMD-specific requirements unique to GA (Government Administration) and PSC (Public Safety Communications). It may be useful to research

whether these groups are receiving adequate WMD training, or if their preparation for WMD events is taking place in their general all-hazards T&E.

In Volume I, we noted a lack of exclusive Public Health (PH) requirements (eight at the time that report was delivered). As we have continued to locate and add requirements, we have found that this is no longer the case; there are now 89 Public Health-exclusive requirements. In fact, PH, together with EMA, currently have the most functional –area-specific requirements.

D. REVIEW OF TRAINING AND EXERCISE PRODUCTS

1. OVERVIEW

This section describes work related to analysis task 2, Review Media, and task 4, Link Media with Strategy Attributes and T&E Requirement Categories. The full set of analysis tasks is shown below in Figure 6; tasks described in this section are shaded.

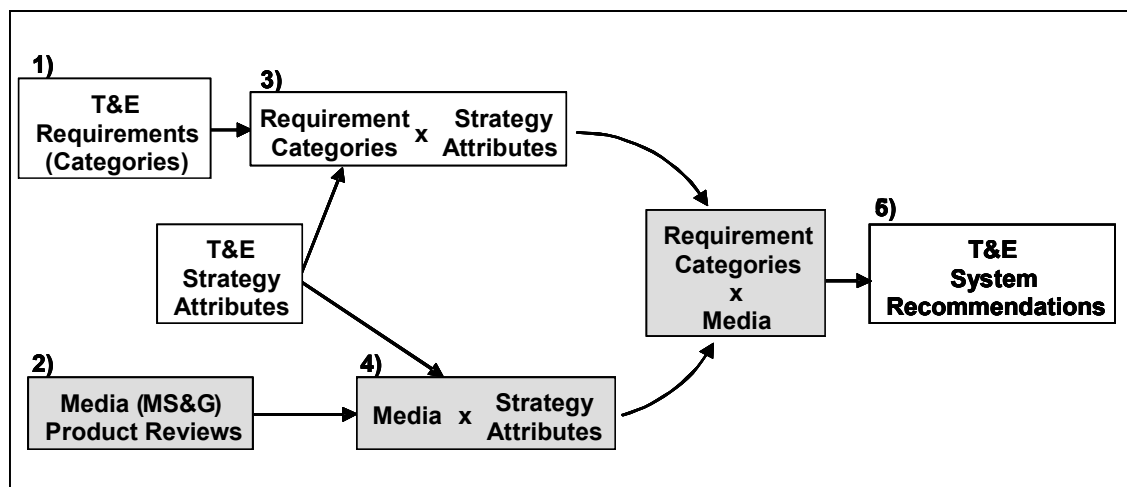


Figure 6. Analysis Tasks

Task 2, Review Media – Potentially relevant MS&G products were identified from a variety of sources, including homeland security conferences, personal contacts, discussions with ODP exercise planners and participants, and ODP staff. The product reviews for this second set of 45 products, listed below along with abbreviations, took place from May 2003 through September 2003.

Table 3. List of 45 T&E Products Reviewed in the Second Round

Product Name	Acronym
ADASHI First Response Automated Decision Aid System for Hazardous Incidents (ADASHI)	ADFR
ADASHI Professional Automated Decision Aid System for Hazardous Incidents (ADASHI)	ADPR
Automated Exercise and Assessment System (AEAS)	AEAS
Biological Weapons Response Template	BWRT
BioSimMER	BSMR
Civil Emergency Reaction and Responder Training System (CERRTS)	CRTS
Consequences Assessment Tool Set - Joint Assessment of Catastrophic Events (CATS-JACE)	CJJC
Disaster Response Board Game*	
E Team	ETM
Eagle Defender	EGLD
Emergency Response Synchronization Matrix	ERSM
Fire Studio 2.0	FS2
First Responders Situational Awareness Tool (FiRST)	FRST
Gaming and Multimedia Applications for Environmental Crisis Mgt. Training (GAMMA-EC)	GEC
Groove	GRV
Guard Force	GF
Hazard Prediction and Assessment Capability (HPAC)	HPAC
Hybrid Particle And Concentration Transport Model (HYPACT)	HYP
JANUS (Natl. Guard Version)	JANS
Joint Conflict and Tactical Simulation (JCATS)	JCAT
Joint Theater Level Simulation (JTLS)	JTLS
LifeLine Videos	LLV
Mass-Casualty Medical Training and Evaluation (MMT&E)	MMTE
Meteorological Information and Dispersion Assessment System - Anti-Terrorism (MIDAS-AT)	MIDA

Minerva	MINV
National Security Network	NSN
OpsCenter	OPSC
PEGEM	PEGM
Quick Urban and Industrial Complex Dispersion Modeling System (QUIC)	QUIC
RAMSAFE	RAM
Regional Atmospheric Modeling System (RAMS)	RAMS
Response Information Folder System (RIFS)	RIFS
S3-Exercise	S3
San Louis Rey	SLRY
SEAS/Homeland Security Simulation	SEAS
SimViz 3400ICS - Standard	SVZS
SimViz 3400ICS - Tailored	SVZT
SimViz 3400ICS - Custom	SVZC
SoftRisk	SOFR
SPECTRUM	SPCM
STAT Care	STC
TUTOR	TTR
Virtual Cities	VCIT
Weapons of Mass Destruction Decision Analysis Center (WMD-DAC)	WDAC
WebEOC	WEOC

* Learning Landscapes, the original developer of the Disaster Response Board Game, has gone out of business. The game is owned by the American Red Cross Disaster Service Program; however, they did not return repeated phone calls concerning this review.

The reviews were performed in accordance with a template, which directed attention to specific product-related issues. These reviews have narrative responses for many fields and constitute a collection of Microsoft Word documents. The product review

template can be found in Appendix C; complete reviews are found on the CD accompanying this report. Each product was also rated for specific attributes in a Microsoft Excel spreadsheet; the analysis presented in this section is based on that spreadsheet.

Of the 45 products reviewed in this second round, one was unavailable (Disaster Response Board Game); the remainder of this section analyzes 44 products. These 44 products included a wide range of MS&G products, from prototype products to sophisticated military certified simulation systems, and from individual learning products to team training media. “Supporting technologies” is a new product classification type added since the first round. These products provide supporting technologies that can be applied to T&E implementation and administration but are not considered to be primary T&E media on their own. That is, supporting technologies usually would not be used in a standalone fashion to deliver T&E. Rather, they would provide support to other primary T&E media (i.e., products that may be used alone to provide T&E). An example of a primary product would be a team trainer. It may use a plume model to generate simulation of gas dispersion; the plume model would be considered a supporting technology. Products sourced from both commercial and government developers are represented in this sample, with some products potentially having dual sourcing status. Short one-page descriptions of the products are contained in Section E.

The review process remained the same as that described in Agrait, et al., 2003b, a structured subjective review relying on subject matter expertise and internal consistency checks. Some details in the process have changed, as we refine the process of assigning values to attributes for each product (e.g., we have added a new attribute HLA¹⁰ Compliance, and we have added two new choices for functional area: Transportation and Private Sector). The remainder of this section includes a detailed discussion of the results of the task 2 analysis, Review Media, and the results of the task 4 analysis, Link Media with Strategy Attributes and T&E Requirement Categories.

¹⁰ High Level Architecture (HLA) compliance is defined by IEEE standard 1516, designed to enable simulation reuse and interoperability across different types of simulations. It was originally developed within the DoD modeling and simulation community.

2. REVIEW MEDIA

a. Introduction

The 45 products reviewed in this document represent only a portion of MS&G products currently available or in development. This section provides observations about those MS&G products from this round; first-round products are not discussed. The range of product sources spans domestic commercial, governmental, and military organizations, as well as international companies and consortia. Conclusions and recommendations about MS&G products as a whole will be reserved until all three phases of the survey are completed.

The following subsections present and discuss the aggregated results of the round 2 product evaluations, considering various technology attributes and T&E features. Given the range of product types and applications, only a summary analysis is provided to capture the main observations of the second-round sample. A detailed description of the link between products and T&E requirements follows in section D.2.

Data were collected and rated for numerous product attribute categories in the database, using two main guidelines: (1) The attributes were to be judged for the *existing version* of the product, as it was typically used for its (2) *primary purpose*. The coding method provides for judgmental uncertainty (for reasons such as incomplete product development at the time of evaluation) and inapplicability (i.e., an attribute category may not apply to a particular product). Three ratings were possible for each attribute category; each was assigned a numeric code in an Excel spreadsheet:

- Product does not support the given characteristic, or that characteristic does not apply to the product (coded as 0).
- Product supports the given characteristic (coded as 1).
- Product potentially supports the given characteristic (coded as 2). This might be caused by a number of factors: the product could theoretically be used in this way, but that use hasn't yet been demonstrated; insufficient information; difficulty in interpretation given the attribute definition; or support of a given attribute is relatively indirect.

In preparation for the final analysis of all three rounds of product reviews, the product category designations listed below have been added to the spreadsheet. Product category designations have been added to facilitate analysis of products by descriptive classifications. The first four designations are mutually exclusive: Electronic Simulation, Non-Electronic Simulation, Computer-Based Training other than Simulation, and Game.

The remaining designations are not mutually exclusive and can also be used in addition to one of the first four: Instructor/Facilitator Aid, Student Learning Aid, and Supporting Technology Product. Definitions of these attributes can be found in Appendix B.

Electronic Simulation: Any device or system that supports T&E objectives using electronic simulation or stimulation (electronically driving operational equipment) as the primary medium. When used as a primary T&E media (vice as a supporting technology), such a product would likely simulate information associated with student/participant performance of operationally oriented tasks (i.e., support learning/exercising skills in an operationally meaningful context, rather than just knowledge). Importantly, such products would specifically address team and/or individual T&E.

Non-Electronic Simulation: A product having similar attributes and objectives as above, but implemented through non-electronic means (e.g., a tabletop simulation).

Computer-Based Training other than Simulation: Computer-based software and/or hardware that does not include simulation as a component. Students/participants interface directly with these products and do not require constant attention by an instructor/facilitator. A CD-ROM or Internet-accessed tutorial is an example.

Game: A product whose primary purpose is competition in pursuit of a specific goal, constrained by a set of rules. Usually, these would be commercial products whose primary objective is player entertainment. Games developed for training military personnel (war games), for example, would not be classified as a game, but rather as one of the preceding categories.

Instructor/Facilitator Aid: A product, not otherwise classified above, that primarily assists the instructor/facilitator by providing information, accepting inputs, and performing other support functions during T&E.

Student Learning Aid: A product, not otherwise classified above, that interfaces directly with students/participants, providing information and/or requiring inputs.

Supporting Technology Product: A product that facilitates achieving T&E objectives through some other primary learning medium, that provides generic functionality (i.e., the design intent of the product is not tightly coupled with a specific end-user application), and that is capable of supporting multiple end-user applications and/or application integration, typically through standardized interfaces. Such products may simulate events other than T&E activities (e.g., atmospheric dispersion models) and may not necessarily have learner-related intent or design features.

This last class of products is relatively distinct from the others due to the indirect utility that supporting technology provides for training and exercising. Despite the fact that these products are not considered as primary T&E media, they nevertheless embody functionality that must be included in the overall review of MS&G products. In order to yield a reasonably complete survey and analysis of modeling, simulation, and gaming technology for T&E purposes, supporting technology products will be treated in more detail in the final volume of this series. Eleven of the 44 products reviewed here fall into this category (ADFR, ADPR, GRV, HPAC, HYP, MIDA, NSN, PEGM, QUIC, RAMS, VCIT). These products are included in summary statistics below but are excluded from the cost and location-specific bubble charts.

The aggregate of the product ratings is a “snapshot” of products as of the preparation of this document, and it may not reflect any future changes that vendors might make to any of these products. Similarly, these results are not intended to be exhaustive but rather to be indicative of this round of product evaluation. (In Volume III, similar analyses will be conducted across all products in the final round of evaluation.) A tabulated selection of attribute ratings for products evaluated in this round can be found in Appendix D.

b. Analysis of Product Data

In keeping with the first-round product analysis, we attend to the fundamental questions of who, where, how, and how much?

- Target audience – For whom are these products designed?
- Location – Where does learning or T&E take place?
- Training – What kind of learning, training, or exercising do they support?
- Relative cost – What does it cost, relative to other products?

This section presents summary statistics of product attributes in the form of frequency distributions to provide an overview of the breadth and depth of data collected.

1. Observations Relating to Target Audience (Who?)

Four attributes of a product help to define its applicability to certain users: its intended target audience, the functional job areas that it covers, the types of training supported, and the levels of training to which it applies. The charts below are sorted to position highest currently supported attributes to the left (i.e., attributes rated a “1” in the

spreadsheet). Percentages indicate the portion of the total sample of products, with 44 being 100 percent.

Currently, we identify five audience types: First Responders, Commanders, and Local, State, and Federal Officials. Functional Job Area covers organization types: Emergency Medical Service (EMS), Emergency Management Agency (EMA), Fire Department, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, and two new areas added since Volume I – Transportation and Private Sector. Eleven types of training were identified for the products: Awareness, Part-Task, Equipment, Pre-Training Prior to Exercises, Drills, Table Top Exercises (TTX), Functional Exercises (FE), Full Scale Exercises (FSE), FSE Reinforcement, Distributed Collaborative Training, and Exercises of National Scope. Five levels of WMD-related training are identified: Awareness, Performance (equivalent to operations), Technician, Planning and Management (including the incident command system (ICS)), and High-Level Command and Control/Multi-Jurisdictional.

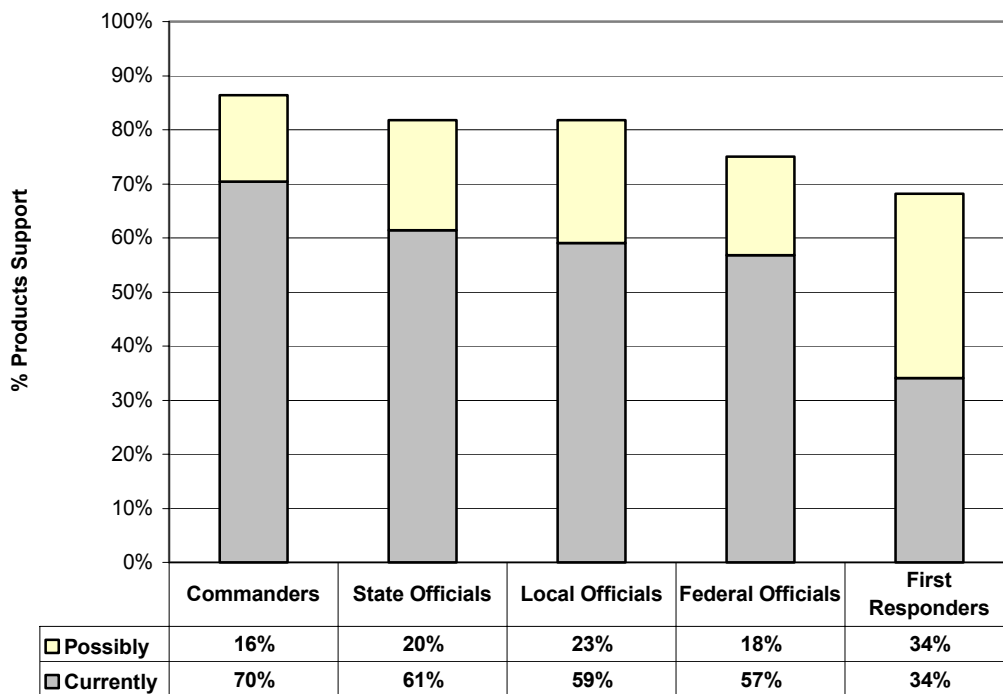


Figure 7. Percent of Products, by Target Audience

Products were rated as supporting one or more target audiences. A majority of products targeted the audiences of interest, with Commanders being the most commonly

targeted user group. In this round, First Responders were found to be the least targeted user group due to the preponderance of command and control types of training products in this sample. Conclusions about targeted audiences will be drawn, based upon the entire survey sample, after the final round of product evaluations.

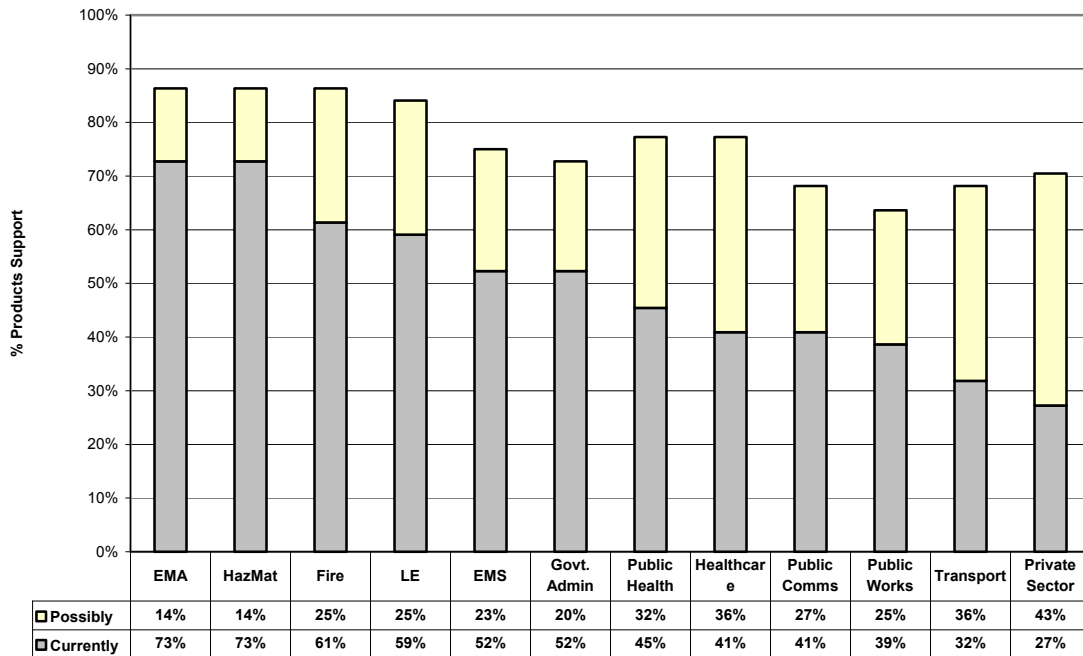


Figure 8. Percent of Products, by Functional Area

The top four functional job areas (disciplines) supported by these products were, in order, EMA, HazMat, Fire, and Law Enforcement, reflecting the traditional T&E constituency. Although they are included in the above chart, Transportation and Private Sector designations were added after the first round of product reviews and cannot yet be placed within a meaningful context for the sake of comparison (i.e., with regard to the first-round findings). The distribution of supported functional areas, however, has changed from the first round, in which the top three areas were EMS (82 percent), LE (76 percent), and EMA (71 percent). This reflects a different mix of products surveyed in the two rounds.

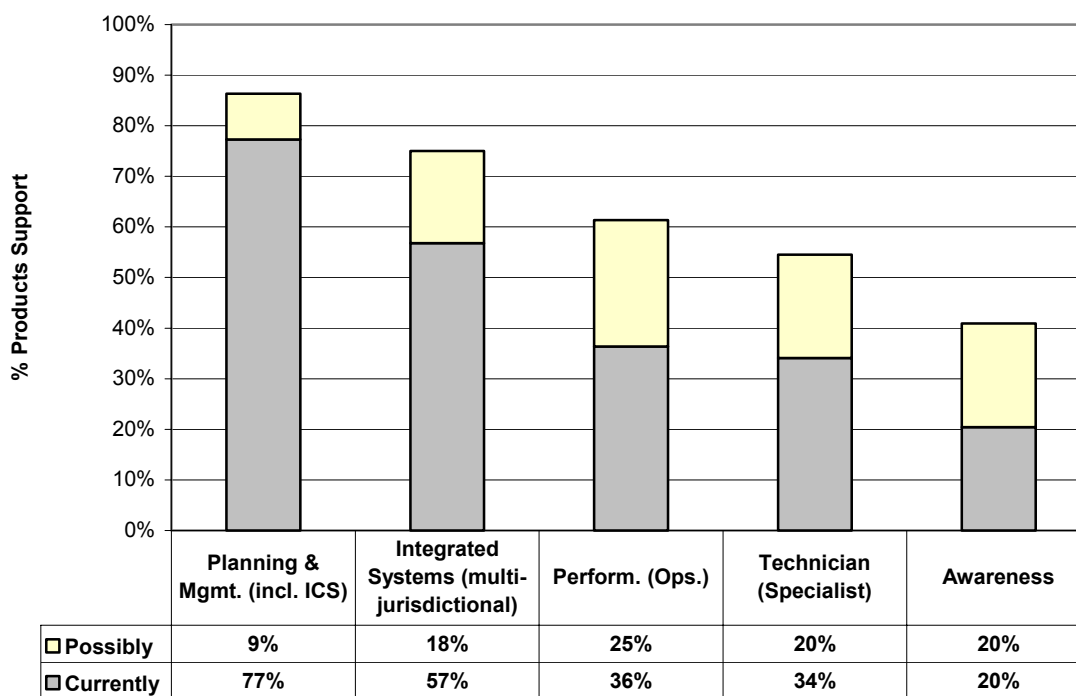


Figure 9. Percent of Products, by ODP Training Level

ODP-defined training levels were found to have a wide range of support in the current product sample. Planning and Management (including ICS) was the most frequently supported level of training: 34 of the 44 reviewed products (77 percent) currently support such training. The chart above, however, reinforces the observation from the first round of the low level of current support for awareness training. Only nine (20 percent) of the products surveyed currently support, and another nine were judged to potentially support, WMD awareness training. While it is premature to draw any conclusions, it appears increasingly likely that product selection bias is not the cause of these results, and that this sample statistic may possibly be representative of a relatively low number of products in the MS&G population that address awareness training.

To summarize user profile observations, we find that a preponderance of second-round products support commanders, state and local officials involved in emergency management, HazMat, fire, and law enforcement duties, typically at a management or multi-jurisdictional level. This core target group is consistent with the major potential audience for ODP training and exercising programs.

2. Location Observations (Where?)

Location refers to both the *physical* training site (where the students/participants are) and the training environment (location of the scenario-based incident). A significant benefit of MS&G is the ability to separate the two, in that a virtual environment may replace an actual physical locale for training purposes. Modeled or simulated training environments (“constructs”) can therefore help to minimize or avoid costs for concurrently collocating people, equipment, and facilities. Products reviewed in this round include such virtual training constructs as well as other locale-specific models.

MS&G can link artificial events with real places for T&E purposes via different kinds of models that have locale-specific capabilities. These types of MS&G generate information on events or effects ranging from weather to radiation that cannot be created in a real-world training or exercise. For example, we reviewed eight atmospheric dispersion models that simulate environmental conditions associated with an incident for potential use as exercise input, or otherwise provide training on the dispersion, dosing, and mortality rates of WMD agents for specific locations and weather regimes. The range of available prediction models can estimate damage to geo-specific locations not only from dispersion and deposition of WMD agents (either from facilities or munitions), but also from earthquakes, hurricanes, and storm surges.

Many types of training and exercising must be specific to a given location in order to meet the training objectives. We observed in this round that 70 percent of all the reviewed products currently provide locale-specific support, and 80 percent support generic training environments. All eight dispersion and meteorological models supported specific terrain modeling (to varying degrees of resolution).

In the case of commercial MS&G products, we noted that vendor-provided location specificity is generally limited to few locales. Conversely, a number of government-developed products provided worldwide location specificity using classified terrain data from the National Imagery and Mapping Agency (NIMA). Several reviewed products developed by the U.S. military (in particular, SPECTRUM and JANUS) are thereby restricted to Department of Defense (DoD) users cleared for NIMA data access. A number of products (e.g., CATS-JACE and SPECTRUM) required integration of third-party mapping software to implement the map-based graphical user interfaces. Beyond raising the full package price for such products, this issue complicates the procurement and licensing process. Third-party licensing of key T&E system components, such as mapping

and terrain display, is an issue that may affect ODP strategy for T&E deployment to federal, state, and local constituents.

The location of student/participants for the purpose of T&E is a different issue from the product's ability to model the specific or generic incident locations. Some products run in a distributed mode, allowing one or more users to interact with the T&E system from different locations. This capability has significant bearing on system deployment and T&E program strategy. Nineteen of the 44 reviewed products (43 percent), for example, currently allow for distributed collaborative use of shared T&E resources, while others provide only standalone functionality (i.e., they require students/participants to be located together). Several additional products are expected to undergo modification to enable distributed collaborative use in the near future. The selection of MS&G products for T&E will depend largely upon the training objectives (including the number of simultaneous users and need for collocation) but will also depend on other factors that impact the accessibility of training. Examples of such factors are costs for travel away from duty station, scheduling (degree to which T&E may or may not correspond with other duties), and availability of auxiliary or supporting resources (including other students/participants).

3. Training Observations (How?)

This section provides an aggregate view of how reviewed products are used in practice. Note that material presented here does not replace the requirements analysis performed using RRP to map products to recommended training strategies. The following characteristics offer a sense of how training is performed:

- Application environment (intended purpose).
- Supported training types.
- Supported WMD event types.
- Supported learning modes.
- Learning/teaching methodology (self-paced vs. instructed or facilitated).
- Product “replayability” (the degree to which continued use generates additional learning benefits).
- After-action review (AAR) support.

Five types of applications/uses are identified in this round of products: training, operations, planning, analysis, and entertainment. The type of training is currently broken into 11 categories: awareness, TTX, part-task training, pre-training, drills, equipment training, distributed collaborative exercise, FE, FSE, FSE reinforcement, and national

training exercises (e.g., Top Officials Exercise (TOPOFF)). Learning types are threefold: initial acquisition, improvement, or maintenance/refresher, or a combination of those. Self-directed learning or training is distinguished from instructor-led sessions. Replayability rates the level of “dynamism” in a product; some products have only one right way through the T&E content, while in other products, users can take multiple paths through the T&E content. AAR capability has four attributes describing whether recommendations and user performance data are provided, or only performance data are provided; whether recommendations and performance data are created by the product or by a subject matter expert (SME); and if the product can replay events that occurred in the T&E. For definitions of these terms, see Appendix B.

Most of the reviewed products pertained to exercising (68 percent, with another 20 percent potentially supporting), analysis (59 percent), and training (57 percent) as their primary application. The five categories are not mutually exclusive, as products can be applied to multiple uses. See Figure 10.

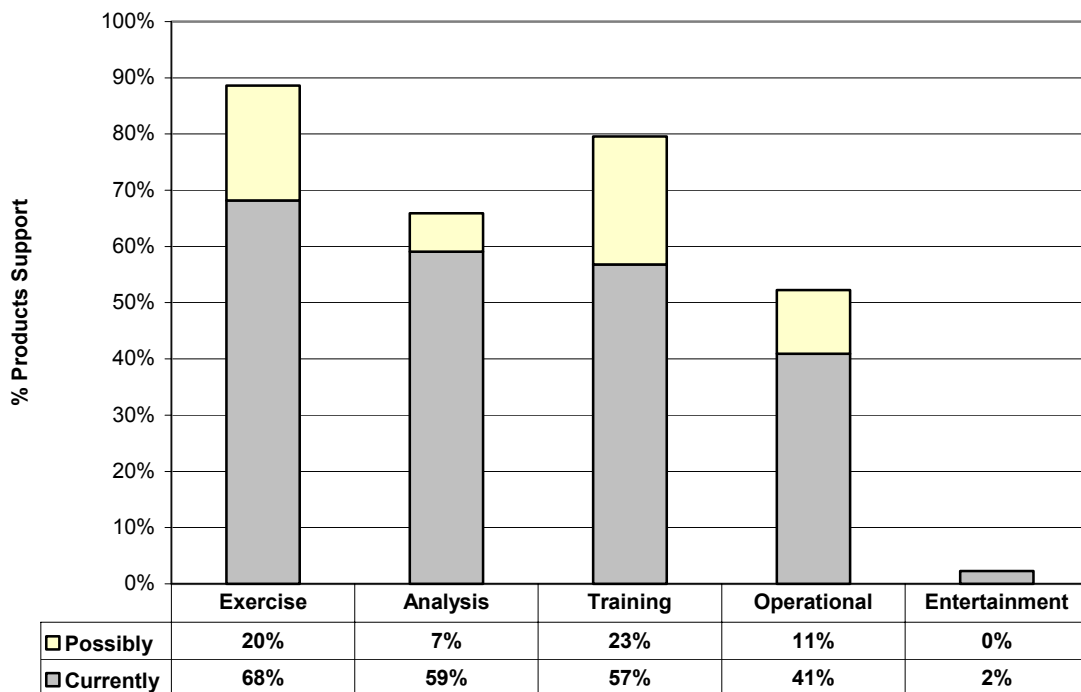


Figure 10. Percent of Products, by Application Environment

Functional exercises (Emergency Operations Center (EOC) or command post exercises) are the type of training most frequently supported by this sample of products, an observation that accords with exercise being the most frequently supported application environment. The next three training types were tabletop exercises, exercise pre-training, and distributed collaborative exercises. At the low end of the scale, only one of the 44 sampled products supports equipment training, while three more could possibly support equipment training. These results are consistent with the preponderance of products in this round directed toward emergency management exercising and related training. See Figure 11.

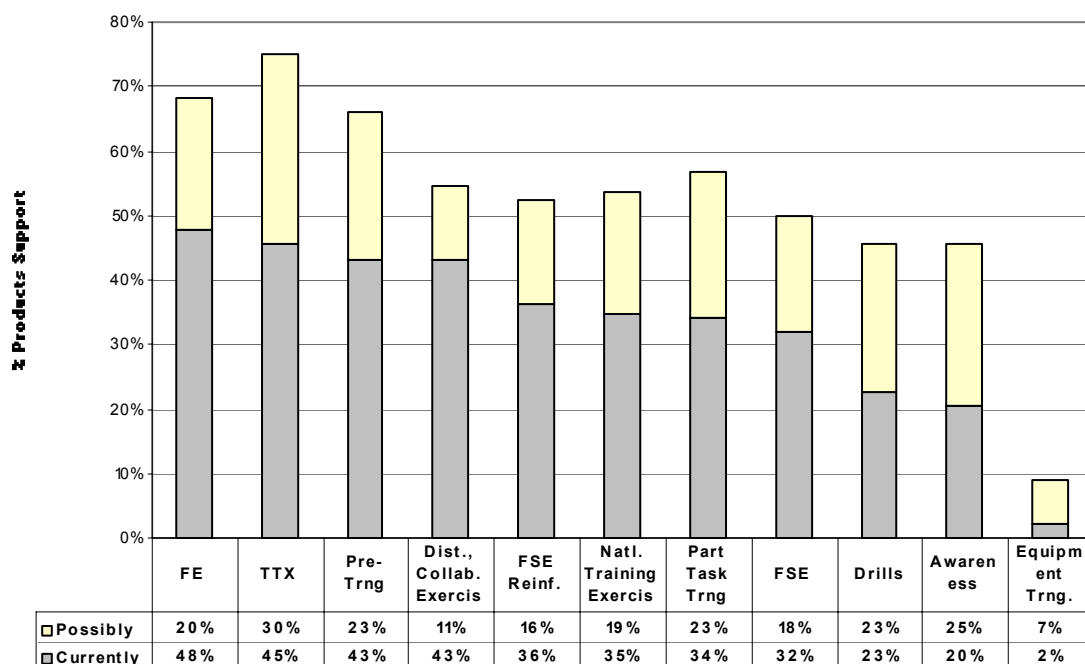


Figure 11. Percent of Products, by Training Type

When analyzing products by the WMD event type they support, chemical events and explosions are the most frequently supported types of WMD events; radiological and nuclear events were found to be less frequently supported, as shown in Figure 12. This is the same finding as in the first round of product evaluations and appears to be related to two factors. The first is the existing capability of first responder organizations to deal with relatively common chemical spills and explosions (including fires). (Likewise, the number of chemical or biological WMD requirements identified to date is greater than the number identified for radiological WMD.) The second factor is that it is easier to model chemical

spills or explosions than nuclear and radiological events. Given the larger sample size of the second round, it is likely that this distribution is more nearly representative of the population of MS&G products than the first-round product sample. Nevertheless, all products will be cumulatively analyzed in the third-round product review.

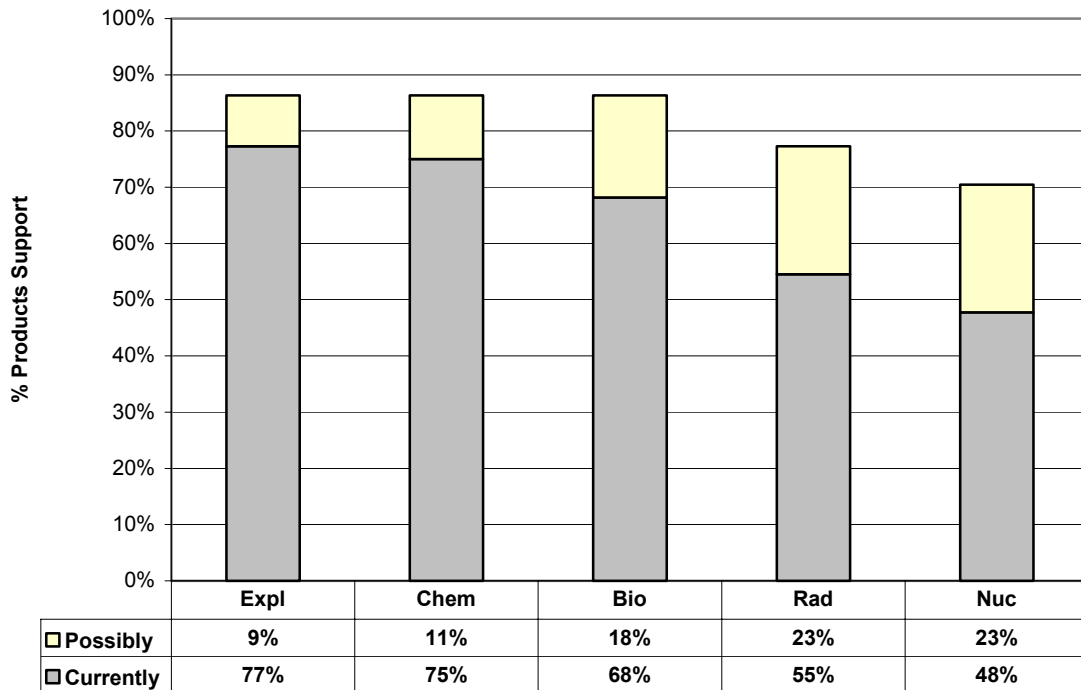


Figure 12. Percent of Products, by WMD Event Type

For learning mode/methodology, 75 percent of the reviewed products supported improvement learning, 66 percent supported maintenance/refresher learning, and only 34 percent supported initial acquisition learning (note that products can support more than one type of learning, thus the percentages will not add up to 100 percent). The relationships found in the first-round product analysis, between instruction/learning methodology and other attributes, were not substantiated in this round; the second round of product analysis does not support the hypothesis that first responders may prefer instructed or SME-led training sessions. Instead, in this round, we observed that commander level training, intermediate and advanced student levels, plus improvement and refresher training were closely linked with instructor/facilitator-led T&E. This outcome is not surprising, given the functional complexity of many of the reviewed products.

4. Cost Observations (How Much?)

Comparative cost-benefit analysis is not straightforward, nor is it particularly meaningful for such a diverse group of products, due to the wide range of uses, functionalities, physical implementations, and degrees of adaptability, among many other characteristics. Another significant drawback to performing such analysis is the limited pricing information available from many vendors or developers. There are a number of reasons for incomplete pricing:

- Some reviewed products were developmental prototypes at the time of this review and had no established pricing or market value.
- Some products potentially can be sourced as either commercial or government-owned products. Several reviewed products were developed by national laboratories (including Lawrence Livermore, Sandia, Argonne, and Los Alamos) and partner institutions that retain intellectual property and marketing rights to products that were partly or wholly funded by the U.S. government. This dual status has confused and slowed the marketing of such products to the civil domestic preparedness community, partly due to developer uncertainty over ODP procurement strategy.
- Many vendors cannot (or are reluctant to) provide specific cost information without user-defined system requirements. While some products are stock items, many are provided either as customized versions or as T&E services for which the customer must provide requirements.

Cost data, therefore, were characterized in one of four ways: actual (known) costs or quotes, typical costs, or minimum and maximum likely costs.

In keeping with the first-round review, multidimensional charts plot relative value according to a particular domain and a given “value dimension.” In the following two charts, “potential” cost is plotted on a log scale y-axis, and the application environment is the domain plotted on the horizontal x-axis. Potential cost represents the maximum likely cost to acquire a fully featured product (including required auxiliary modules or products). Where commercial cost information for dual status COTS/GOTS products was available, these values were charted (e.g., CJJC, ERSM). A third dimension indicates relative value by the size of the circle or bubble (larger bubble means more potential value). In the first chart, the bubbles indicate the percentage of the 11 training types (e.g., functional exercise, and equipment training) the product supports. Product labels designate partially hidden bubbles or products on the periphery of clusters, and do not otherwise have significance.

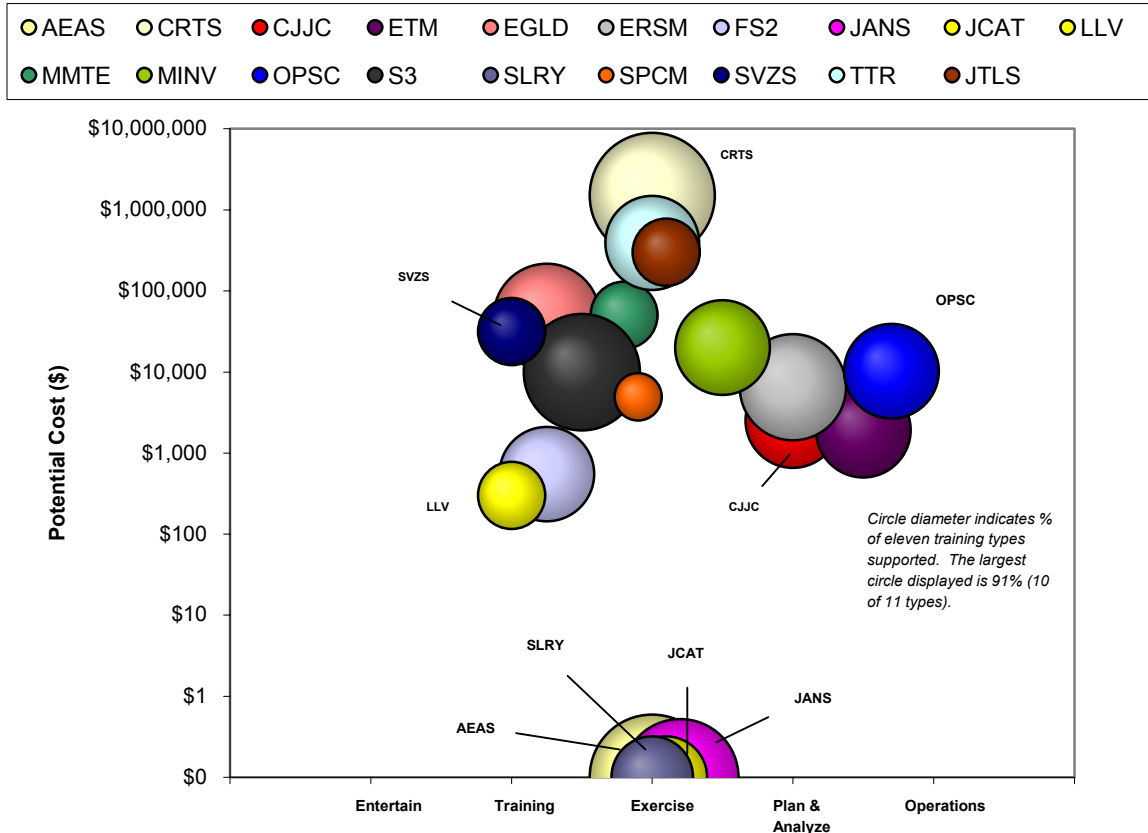


Figure 13. Potential Package Cost vs. Application Environment, by Training Type

The products displayed in Figures 13 and 14 have been filtered, leaving out prototypes, supporting technology products, other products with unknown pricing, and products requiring customization for which no generic cost data are available. This leaves 19 products, which can be grouped into three clusters:

- Systems, developed by the federal government, primarily centered in the exercise domain that may be transferred to federal users rather than purchased (AEAS, SLRY, JCAT, JANS).
- Products with prices ranging between several hundreds of dollars to several millions of dollars (LLV, SVZS, SPCM, S3, EGLD, MMTE, JTLS, TTR, CRTS).
- Products in the Exercise to Operations domains that are priced between several thousand dollars and tens of thousands of dollars (MINV, ERSM, CJJC, ETM, OPSC).

As in the first round, the cost dimension spans five to six orders of magnitude, and most products are clustered in the T&E domains. The cluster of government-developed products appears to be a “bargain” given negligible acquisition costs. Yet, other costs are not represented here, such as operating costs, support costs, remuneration of program overhead, etc. Recurring costs are likely to be substantial in relation to the initial acquisition costs, such that total ownership or total lifecycle costs should preferably be used for evaluation. Although there may be an advantage in centralizing MS&G product procurement to potentially obtain volume discounts or negotiate interagency technology transfer, it is beyond the scope of this project to compare federally centralized versus decentralized procurement strategies.

We next consider the degree to which a product supports location-specific training environments. The same (log scale) Potential Cost values are plotted against the same Application Environment x-axis domain, but the bubble size “value” dimension is changed to represent relative locational value of the training environment. We generate a scale for the bubble diameters according to the following percentages:

	Locale Specific	Generic
Current Support	60%	40%
Possible Support	30%	20%

Note: Percentages in table indicate diameter scales

Product bubble sizes are calculated as the sum of locale-specific and generic environment ranks, such that 100 percent is awarded to products that currently support both.

Ten of the 19 products charted below provide both generic and locale-specific environment support. As with Figure 13, the charted products are filtered, leaving out prototypes, products with unknown pricing, and support technology products. We observe a more uniform distribution of bubble sizes than in the first-round review. Recall that of the 44 products reviewed, 70 percent supported locale-specific environments and 80 percent supported generic environments, and that the charted products are filtered.

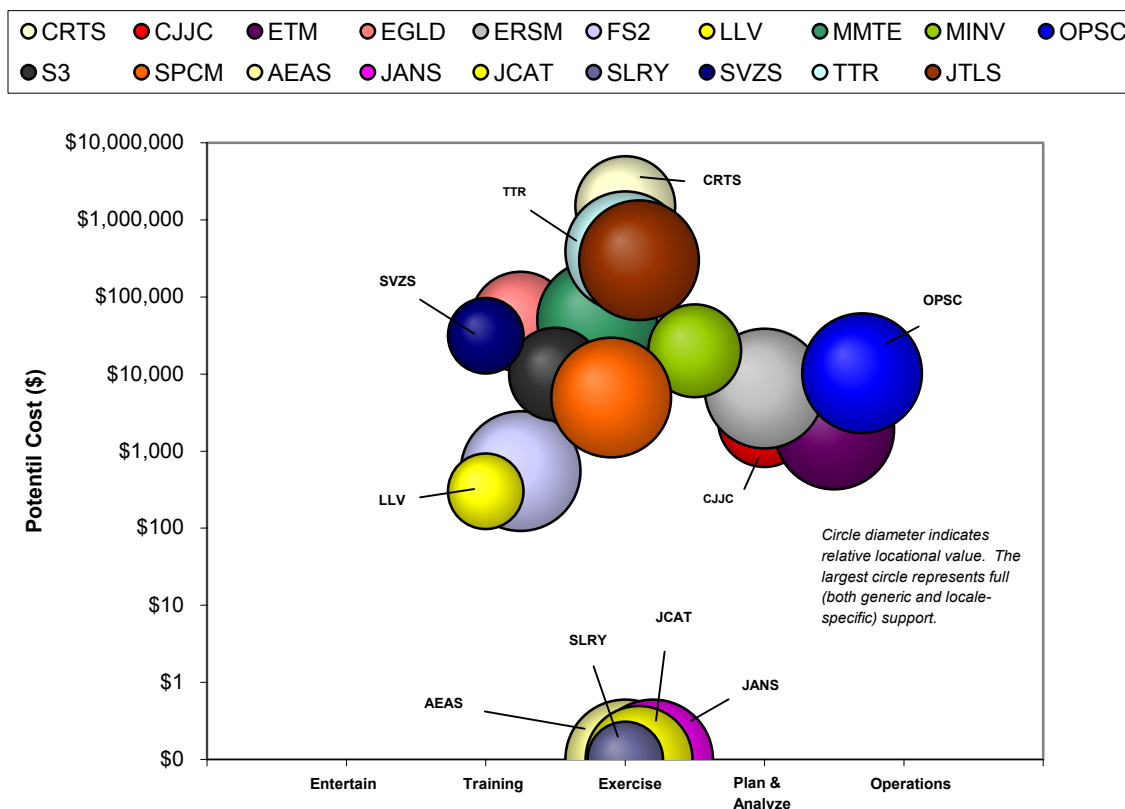


Figure 14. Potential Product Cost vs. Application Cost, by Relative Locational Value

Product cost will be a significant factor in the administration of T&E programs, at all levels of government. A more complete picture would be provided by total product costs, which may involve many direct or indirect costs such as: initial acquisition, installation, staff training, customer support, maintenance, utilities, administration, etc. It is beyond the project scope to identify and quantify all such costs. Instead, our interest in cost focuses on the effect it may have on program planning and training strategy. The concluding document, therefore, will discuss some ways in which fixed and recurring costs of certain product types may influence product selection according to the type of training or exercising.

5. Media Review Summary

The process by which T&E media are reviewed remains unchanged between the first and second rounds, as does the presentation of many of the summary statistics and analysis. The product attribute database, however, continues to be tuned according to the

anticipated needs for the final analysis of all reviewed products; new attribute fields have been added for this second round of evaluations.

Despite a threefold increase in sample size over the first round, we observed, generally speaking, a more homogeneous set of products in the second round. Twenty-nine of the 44 products were categorized as Electronic Simulation, out of which eight atmospheric dispersion models were also designated as Supporting Technology (included in summary statistics, but excluded from cost charts). These products (ADFR, ADPR, HPAC, HYP, MIDA, QUIC, PEGM, RAMS) are primarily analytical and operational tools that can be applied to training and exercising.

Relative homogeneity of the product mix is likely a result of the selection process (detailed in Volume I of this series¹¹), especially with inclusion of 16 government-developed products from organizations with direct or indirect DoD or Department of Energy (DOE) sponsorship.

One issue that will affect future procurement decisions is the uncertain intellectual property status of some of the DoD and DOE products. Although some of these products are available for civilian use, the status of many was not clear at the time this document was prepared. Negotiating the transfer and use of any such product for DP T&E may be more a complicated and time-consuming process than anticipated.

3. LINK MEDIA WITH T&E CATEGORIES

The results of this round of product evaluations continue to “tell the story” of WMD T&E requirements as they relate to MS&G. As previously noted, we refrain from drawing conclusions at this stage in the project in order to properly complete the cataloguing of requirements and evaluation of products. Our approach is to create a flexible mapping structure that will eventually allow users to identify products and requirements based on their selection of relevant attributes. Examples of user queries about products and requirements, mentioned in section C of this document, will be expanded upon in this section. The following subsections will cover:

- The current mapping of requirements and products.
- The current round of product mapping to ThoughtLink recommendations observations.
- Anticipated future RRP enhancements and reporting capabilities.

¹¹ Agrait, et al., 2003b.

a. Mapping of Requirements and Products

As described earlier in section C, products and requirements are coded for a common set of attributes (refer to Appendix B for a listing and definitions of these), creating the linkage between requirements and MS&G via T&E strategy. The mapping shown in Figures 15-20 below indicates which of this round's MS&G products are best suited, based only on T&E strategy, for training/exercising each category of requirements. These figures show which products (listed in each row) map to each T&E category (listed in columns). The last letter of the column name corresponds to the name of a T&E requirements category; descriptions of these categories can be found in Table 2. The intersection cells marked with an arrow indicate mapping. (This corresponds to a rating of "1" on the Excel spreadsheet, per the T&E strategy analysis described in Section D.2.a above.) If the cell is left blank, there is no linkage between the two at this point.¹² If the cell has an arrow with a line across it, this signifies a "suspect" mapping (corresponding to an Excel rating of "2" on T&E strategy as described above). This means that the tool could support the strategy, but not in its currently available form (i.e., it requires enhancements/development). We included these "suspect" mappings because we believe that their inclusion provides a more comprehensive assessment of near to intermediate term availability of desired technologies. Excluding these tools might steer the analysis towards inaccurate portrayal of available technologies and/or technologies that might be close to completion and can meet T&E requirements for ODP.

The following figures from RRP are representative only. Results contained in this report should be considered tentative until the conclusion of this effort when all product evaluations will be reviewed for consistency.

¹² This is not to say, for example, that a particular tool cannot be used to train/exercise requirements other than those listed under that particular category. Products may be appropriate for requirements or attributes not considered in this project.

	STRQ1273: A	STRQ1275: AA	STRQ1276: B	STRQ1277: BB*	STRQ1278: C	STRQ1279: CC*	STRQ1280: D	STRQ1281: DD	STRQ1282: E	STRQ1283: EE*	STRQ1284: F	STRQ1285: FF*	STRQ1286: G	STRQ1287: GG	STRQ1288: H
ADFR															
ADPR															
AEAS															
BSMR															
BWRT															
CJJC															
CRTS															
EGLD															
ERSM															
ETM															
FRST															
FS2															
GEC															
GF															
GRV															
HPAC															
HYP															
JANS															
JCAT															
JTLS															
LLV															
MIDA															
MINV															

Figure 15. Strategy Relationship between Products ADFR-MINV and T&E Categories A-H

	STRQ1273: A	STRQ1275: AA	STRQ1276: B	STRQ1277: BB*	STRQ1278: C	STRQ1279: CC*	STRQ1280: D	STRQ1281: DD	STRQ1282: E	STRQ1283: EE*	STRQ1284: F	STRQ1285: FF*	STRQ1286: G	STRQ1287: GG	STRQ1288: H
MMTE															
NSN															
OPSC															
PEGM															
QUIC															
RAM															
RAMS															
RIFS															
S3															
SEAS															
SLRY															
SOFR															
SPCM															
STC															
SVZC															
SVZS															
SVZT															
TTR															
VCIT															
WDAC															
WEOC															

Figure 16. Strategy Relationship between Products MMTE-WEOC and T&E Categories A-H

	STRQ1289: HH	STRQ1290: I	STRQ1291: II	STRQ1292: J*	STRQ1293: JJ*	STRQ1294: K*	STRQ1295: L	STRQ1296: LL	STRQ1297: M	STRQ1298: MM	STRQ1299: N	STRQ1300: N2+	STRQ1301: NN*	STRQ1302: O	STRQ1303: O2+
ADFR															
ADPR															
AEAS															
BSMR															
BWRT															
CJJC															
CRTS															
EGLD															
ERSM															
ETM															
FRST															
FS2															
GEC															
GF															
GRV															
HPAC															
HYP															
JANS															
JCAT															
JTLS															
LLV															
MIDA															
MINV															

Figure 17. Strategy Relationship between Products ADFR-MINV and T&E Categories HH-02+

	STRQ1289: HH	STRQ1290: I	STRQ1291: II	STRQ1292: J*	STRQ1293: JJ*	STRQ1294: K*	STRQ1295: L	STRQ1296: LL	STRQ1297: M	STRQ1298: MM	STRQ1299: N	STRQ1300: N2+	STRQ1301: NN*	STRQ1302: O	STRQ1303: O2+
MMTE															
NSN															
OPSC															
PEGM															
QUIC															
RAM															
RAMS															
RIFS															
S3															
SEAS															
SLRY															
SOFR															
SPCM															
STC															
SVZC															
SVZS															
SVZT															
TTR															
VCIT															
WDAC															
WEOC															

Figure 18. Strategy Relationship between Products MMTE-WEOC and T&E Categories HH-02+

	STRQ1304: OO*	STRQ1305: P	STRQ1306: PP	STRQ1307: Q*	STRQ1308: Q*2+	STRQ1309: R	STRQ1310: S*	STRQ1311: ...	STRQ1312: T	STRQ1313: T2+	STRQ1314: TT*	STRQ1315: U	STRQ1316: UU*	STRQ1317: V	STRQ1318: VV	STRQ1319: W	STRQ1320: Y*	STRQ1321: Z	STRQ1322: ZZ
ADFR																			
ADPR																			
AEAS																			
BSMR																			
BWRT																			
CJJC																			
CRTS																			
EGLD																			
ERSM																			
ETM																			
FRST																			
FS2																			
GEC																			
GF																			
GRV																			
HPAC																			
HYP																			
JANS																			
JCAT																			
JTLS																			
LLV																			
MIDA																			
MINV																			

Figure 19. Strategy Relationship between Products ADFR-MINV and T&E Categories OO*-ZZ

	STRQ1304: OO*	STRQ1305: P	STRQ1306: PP	STRQ1307: Q*	STRQ1308: Q*2+	STRQ1309: R	STRQ1310: S*	STRQ1311: ...	STRQ1312: T	STRQ1313: T2+	STRQ1314: TT*	STRQ1315: U	STRQ1316: UU*	STRQ1317: V	STRQ1318: VV	STRQ1319: W	STRQ1320: Y*	STRQ1321: Z	STRQ1322: ZZ
MMTE																			
NSN																			
DPSC																			
PEGM																			
QUIC																			
RAM																			
RAMS																			
RIFS																			
S3																			
SEAS																			
SLRY																			
SOFR																			
SPCM																			
STC																			
SVZC																			
SVZS																			
SVZT																			
TTR																			
VCIT																			
WDAC																			
WEOC																			

Figure 20. Strategy Relationship between Products MMTE-WEOC and T&E Categories OO*-ZZ

Note that all products but one (Guard Force) are mapped to at least one T&E category (there are currently a total of 49 T&E requirement categories, A-ZZ¹³). This means that almost every product, based upon the strategy attributes considered to date, has applicability for WMD T&E. As the data collection and analysis progress, the query process will be improved, enhancing future users' abilities to consider which products are more appropriate based on their particular criteria. The diversity of the response community and variety of environments impact the appropriateness of media.

Examples are provided to guide the reader through interpretation of these preliminary results.¹⁴ Referring to Figures 19-20 above, categories T and T2+ have the fewest mappings (arrows). The attributes (in bold) for these categories are as follows:

Table 4. Attributes of Requirement Category - T

Student/Participant Unit	Individual, Group, Team , Multi-Agency Team
Student/ Participant Level	Basic, Intermediate, Advanced
Content	Knowledge, Applied , Hands-On
Environment	Generic , Locale Specific
Applied Context	Equipment , No use of equipment

Table 5. Attributes of Requirement Category - T2+

Student/Participant Unit	Individual, Group, Team, Multi-Agency Team
Student/ Participant Level	Basic, Intermediate, Advanced
Content	Knowledge, Applied , Hands-On
Environment	Generic , Locale Specific
Applied Context	Equipment , No use of equipment

Few tools¹⁵ map to these categories because the majority of products evaluated do not train/exercise the use of equipment.

¹³ Please note these letters are merely labels to group categories of requirements together.

¹⁴ ThoughtLink will deliver a comprehensive and final analysis when all proposed products have been evaluated.

On the other hand, category O2+, for example (see Figures 19-20), maps to 33 of 44 products. The strategy for that package is:

Table 6. Attributes of Requirement Category - O2+

Student/Participant Unit	Individual, Group, Team, Multi-Agency Team
Student/ Participant Level	Basic, Intermediate, Advanced
Content	Knowledge, Applied , Hands-On
Environment	Generic, Locale Specific
Applied Context	Equipment, No use of equipment

Most of the products reviewed to date do not train or exercise with actual or simulated equipment, thus this category, where Applied Context=No use of equipment, has more tools that map into it than do categories where Applied Context=Equipment.

Interestingly, there are many products that can meet the requirements for locale specific requirements. This is encouraging, as demonstration of a large group of knowledge, skills, and abilities requires media that is tailored to the specific environment (be it via geo-specificity or depiction of actual resources). This is not to say, however, that Generic tasks are less important than Locale Specific tasks. Rather, it simply highlights the necessity of considering strategy for T&E.

b. ThoughtLink Observations and Recommendations

Central to ThoughtLink's analytical role is the identification of new concepts for improving ODP T&E and suggesting areas where MS&G could augment the current program. These areas include: Best Practices, General, TTX, FE, and FSE. Section E of this document defines concepts in each area and provides examples (more detailed discussion can be found in Agrait, et al., 2003a). All products evaluated to date have been mapped to these areas, developing a view of which technologies are available to meet those needs and those for which development should be considered.

Figures 21-26 illustrate the mappings of our observations to the current round of evaluated products. Observations are the column headings; products are rows. Observations identify areas in which MS&G have not yet been applied to ODP's T&E. The

¹⁵ Only the tools from the current round of evaluations (n=44) were considered in this analysis.

screen shots indicate that at least 6 products can meet each category. This, like the mappings discussed above based on instructional strategy, are positive because they indicate there are several products that meet an as-yet-unexplored area for MS&G.

	STRQ1323:... Specific objectives, criteria, metrics/measure of level of preparedness	STRQ1324:... Audit and evaluate plans and procedures prior to an exercise/Plan Development	STRQ1325: Dissemination of best practices/expans of learning benefits	STRQ1326: Tracking participant performance through multiple tries	STRQ1327: Structured feedback among players
ADFR					
ADPR					
AEAS					
BSMR					
BWRT					
CJJC					
CRTS					
EGLD					
ERSM					
ETM					
FRST					
FS2					
GEC					
GF					
GRV					
HPAC					
HYP					
JANS					
JCAT					
JTLS					
LLV					
MIDA					
MINV					

Figure 21. Mapping of Tools ADFR-MINV to TLI Application Environment Observations

	STRQ1323:... Specific objectives, criteria, metrics/measure of level of preparedness	STRQ1324:... Audit and evaluate plans and procedures prior to an exercise/Plan Development	STRQ1325: Dissemination of best practices/expans of learning benefits	STRQ1326: Tracking participant performance through multiple tries	STRQ1327: Structured feedback among players
MMTE					
NSN					
OPSC					
PEGM					
QUIC					
RAM					
RAMS					
RIFS					
S3					
SEAS					
SLRY					
SOFR					
SPCM					
STC					
SVZC					
SVZS					
SVZT					
TTR					
VCIT					
WDAC					
WEOC					

Figure 22. Mapping of Tools MMTE-WEOC to TLI Application Environment Observations










































	STRQ1328: Increased decision-making	STRQ1329: Tracking interactions/info. among players	STRQ1333: Simulation support
ADFR			
ADPR			
AEAS			
BSMR			
BWRT			
CJJC			
CRTS			
EGLD			
ERSM			
ETM			
FRST			
FS2			
GEC			
GF			
GRV			
HPAC			
HYP			
JANS			
JCAT			
JTLS			
LLV			
MIDA			
MINV			

Figure 23. Mapping of Tools ADFR-MINV to TLI TTX and FE Observations

	STRQ1328: Increased decision-making	STRQ1329: Tracking interactions/info. among players	STRQ1333: Simulation support
MMTE			
NSN			
OPSC			
PEGM			
QUIC			
RAM			
RAMS			
RIFS			
S3			
SEAS			
SLRY			
SOFR			
SPCM			
STC			
SVZC			
SVZS			
SVZT			
TTR			
VCIT			
WDAC			
WEOC			

Figure 24. Mapping of Tools MMTE-WEOC to TLI TTX and FE Observations

	STRQ1334: Remote Observation	STRQ1335: Enhanced communication T&E	STRQ1336: Part-task training	STRQ1337: Pre-Training	STRQ1338: Distributed, collaborative, decision-making environment	STRQ1339: Measure of learning/retention & transfer of learning	STRQ1340: Hospital T&E
ADFR							
ADPR							
AEAS							
BSMR							
BWRT							
CJJC							
CRTS							
EGLD							
ERSM							
ETM							
FRST							
FS2							
GEC							
GF							
GRV							
HPAC							
HYP							
JANS							
JCAT							
JTLS							
LLV							
MIDA							
MINV							

Figure 25. Mapping of Tools ADFR-MINV to TLI FSE and New Concepts Observations

	STRQ1334: Remote Observation	STRQ1335: Enhanced communication T&E	STRQ1336: Part-task training	STRQ1337: Pre-Training	STRQ1338: Distributed, collaborative, decision-making environment	STRQ1339: Measure of learning/retention & transfer of learning	STRQ1340: Hospital T&E
MMTE							
NSN							
OPSC							
PEGM							
QUIC							
RAM							
RAMS							
RIFS							
S3							
SEAS							
SLRY							
SOFR							
SPCM							
STC							
SVZC							
SVZS							
SVZT							
TTR							
VCIT							
WDAC							
WEOC							

Figure 26. Mapping of Tools MMTE-WEOC to TLI FSE and New Concepts Observations

Taken together, these mappings can support the selection of MS&G that directly relate to preparedness requirements. This indicates that there are extant tools that can expand ODP's choice for meeting the response and decision-maker communities' needs. ThoughtLink considers the "Blended Approach" (Vertex Solutions, 2002) a necessity to meet T&E needs due to the heterogeneous audience and diverse training topics. Therefore, MS&G will not completely replace face-to-face training and exercises; however, they may be more appropriate for training/exercising some requirements, with a greater degree of success, than others. In addition, some of these tools may lend themselves to more structured embedded measurement of user performance. Once we complete all three rounds of product reviews, we will further delineate the most appropriate products for each T&E area.

c. Future Reporting Capabilities and Database Refinements

In the previous volume of MS&G review, we described how we have grouped requirements into a number of categories based on attributes. The resulting database will be augmented by the addition of other attributes¹⁶ while retaining information on T&E strategy. The provision of more attributes will allow one to search the database for products and requirements according to a wider selection of user-centric parameters. For example, one might search by Functional Area (e.g., Governmental Administrator) and further limit the query by adding attributes to the search. The same is true for the available MS&G products that have been evaluated. One could then search for MS&G products suitable for training (versus exercising) and choose the intended user (e.g., health care users). In summary, we have designed the database to incorporate features that address a wide range of user needs. We anticipate that this approach will provide flexibility for federal, state, and local constituents to search for and locate information on WMD preparedness requirements and technologies that can be used for training and exercising.

In the final strategy document, ThoughtLink will recommend that this database could provide the foundation for a Decision Support System (DSS), where users could select training requirements, specific needs, and constraints and then be provided with a listing of potential MS&G products.

In order to derive full utility of such a system, it would be preferable for the database to be maintained and updated regularly. As requirements and products change

¹⁶ See Appendix B for a listing of attributes to date and their definitions.

over time, users could continue to access the most current information. Such an effort provides users with two main benefits: first, it allows users to keep current on training requirements (e.g., in a particular aspect of WMD preparedness such as bioterrorism); and second, it allows users to learn of technologies that are not only marketed for, but also are appropriate for, training and exercising such requirements.

Reports provided in this document represent a sample of RRP capabilities for managing numerous sets of data from multiple sources. With continuous refinement of requirements attributes (people inputs to the cycle) and product attributes (technology inputs into the cycle), the link between the two is achieved. The result is a robust architecture that maintains live documents that relate requirements and MS&G product information in a logical context, dynamically linked to a database for sort and query capabilities. In anticipation of adding greater functionality to this architecture, we describe some of the future enhancements to our database and analysis capability.

1. Additional Attributes

The final round of product reviews will describe the expanded query/mapping capabilities. The following attributes, which for the most part have been considered when evaluating products, will also be added to the requirements, allowing a crosswalk between the two:

- Communications – requirements that illustrate intra- and inter-departmental communications processes.
- Functional area (EMS, EMA, FD, GA, HC, HazMat, LE, PH, PSC, and PW) – functional areas are currently only identified for those T&E requirements that are exclusive to each (e.g., if LE and FD share a requirement, that requirement is not identified for a specific functional area). In the future users will be able to tell which requirements should be trained/exercised even if they are not exclusive to a functional area. This can guide users in conducting multi-agency training and exercise design.
 - Hospital T&E requirements.
 - Incident/Unified Command System—requirements pertinent to those performing Incident/Unified command functions.
 - Potential Responder Training Levels (Awareness, Performance A, Performance B, Planning and Management, and Integrated Systems (multi-jurisdictional)).

- Target Audience (First Responders, Commanders, Local Officials, State Officials and Federal Officials).
- WMD type (Chemical, Biological, Radiological, Nuclear, Explosive)—users will be able to identify which requirements are specific to one or more WMD types (e.g., a query would be possible of all nuclear WMD requirements).

This list of attributes should not be taken as the final addition to the database. The process of requirement addition and refinement should keep up with the constant change of T&E needs of the response community.

2. Incident Management Life Cycle

An expected enhancement to the requirement repository database is delineation of where requirements fall in the “life cycle” of incident management activities: awareness, prevention, preparedness, response, and recovery.¹⁷ The National Response Plan indicates that “awareness, prevention, and preparedness efforts will be given similar emphasis to that traditionally afforded to the response and recovery domains. As the definition of these preparedness phases is completed, the resulting requirements will be imported into the database. This will allow users to inspect requirements that fall within the areas of interest and choose which MS&G are appropriate for T&E.

Through the use of RRP, ThoughtLink will continue the process of knowledge management: capturing, organizing, and storing information and experiences within the WMD arena from a variety of sources, internal and external to ODP. This system can allow users to prepare for WMD-related threats and also all hazards. Centralized data collection and analysis, with the potential for distributed access to the database, will provide continued benefits to ODP’s T&E program.

¹⁷ National Response Plan, Initial Plan, Draft. Available online: http://www.nemaweb.org/docs/National_Response_Plan.pdf ; p. 4

E. PRODUCT SUMMARIES

This section contains one-page descriptions of the 45 products evaluated in the second phase of this review. Each product summary includes company contact information, key product attributes, and a brief description of the product. The CD accompanying this report contains full reports on these products.

Attributes

These Product Summaries contain the key attributes that ThoughtLink determined as being most useful and relevant to the ODP T&E system. See Appendix B for expanded definitions of each attribute:

- **Government Off the Shelf (GOTS) or Commercial Off the Shelf (COTS).** Note: Since many of these products are not “off the shelf,” they would require customization before their use in DP T&E; in the future we will refer to these products as government- or commercially owned.
- **Application Environment.** This term refers to the planned or potential area in which the product is used: training, exercise, operations, analysis, or entertainment.
- **Media Scale.** This term shows how many Student¹⁸ Units can use the product simultaneously. The Student Unit categories are: individuals, groups, small multi-user teams, and large multi-user teams.
- **Product Type.** This term describes the product as an Electronic Simulation, Non-Electronic Simulation, Computer Based Training (CBT) other than Simulation, Game, Instructor/Facilitator Aid, Student Learning Aid, or Supporting Technology Product.
- **Training Type.** This term describes the type of training that a product provides: Equipment Training, Awareness, Part-Task Training, Pre-training, Drills, Table Top Exercises, Functional Exercises, Full Scale Exercises, Full Scale Exercise Reinforcement, Distributed Collaborative Exercise, or National Training Exercise.

¹⁸ The term “student” as used here applies to both trainees and exercise participants.

- **Functional Area.** This term describes the professions to which a product is most applicable: EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication, Public Works, Transportation and the Private Sector.
- **Primary Target Audience.** This term describes the broader audience that can benefit most from the use of a product: First Responders, Commanders, Local Officials, State Officials, and Federal Officials.

Observations

As described in Agrait, et al., 2003b, MS&G can be used in two ways: to augment the current exercise program and to provide new T&E opportunities. ThoughtLink identified new areas and related observations where MS&G can potentially improve ODP's T&E conduct in the area of WMD preparedness. These areas and related observations were derived from conducting several WMD responder and decision-maker interviews and reviewing the current exercise program.¹⁹ These observations are included in the product summaries to show which products potentially fulfill those needs.

Selected General Observations. Each product was rated on whether or not it allowed for or could be used for the following needs:

Observation	Description	Example
The need for more specific objectives, criteria, and metrics	Currently, most exercise objectives are too high-level and general. In order to be meaningful and to measure goal accomplishment, objectives should be broken down into more clearly defined elements.	In the military, Standard Operating Procedures (SOPs) define actions to be taken in a given situation in a detailed fashion. An example of military tasks, conditions and standards might include the following: Task—Approach Scene; Conditions—while wearing PPE...; Standards—HazMat team approaches scene from upwind direction...; Expected Actions—Establish an entry corridor...

¹⁹ Agrait, et al., 2003a, pp. 48-55 and 70-81.

<p>The need to audit and evaluate plans and procedures prior to an exercise (plan development)</p>	<p>Currently, substantial time during exercises (particularly TTXs) is devoted to plan/procedure issues. If plans are in good shape prior to the exercise, then poor execution during the exercise will indicate the need for additional training (vs. the possibility that plans and procedures need updating).</p>	<p>The benefits of auditing prior to an exercise:</p> <ol style="list-style-type: none"> 1) ensure cities have plans in place. 2) expose cities to best practices. 3) demonstrate changes to plans while the city is still in the exercise program, instead of afterwards as part of a Corrective Action Plan (CAP). 4) improve exercise effectiveness by heading off obvious plan/procedure problems before the exercise, thus enabling the focus to be on issues best addressed during an exercise. 5) minimize poor execution due to inadequate plans and procedures.
<p>The need for dissemination of best practices</p>	<p>Many cities thirst for information on how to do better. They do not want to simply practice procedures, they want guidance and advice on what are better procedures, information sources, products, etc.</p>	<p>Automated report generation from a MS&G product would quickly compile lessons learned and best practices data that can be shared across the first responder community.</p> <p>Experiential learning tools lead the user to the best course of action.</p>
<p>The need to track participant performance through multiple tries</p>	<p>Too often, evaluation is based solely on participant/evaluator/instructor impressions. Although the subjective assessments of these persons are critically important, they should be coupled, when possible, with objective assessments based on recorded data, to achieve the potential effectiveness of training and exercising.</p>	<p>Electronic recording of student actions and comparison across trials is possible.</p>
<p>The need for structured feedback among players</p>	<p>There is a need for structured feedback among players regarding how their actions affect each other.</p>	<p>Electronic tracking of player communications with replay capabilities.</p>

Selected TTX Observations. Each product was rated on whether or not it allowed or could be used for the following needs:

Observation	Description	Example
The need for increased decision-making	Although at the introduction of a TTX decision-making (vs. plan formulation) is stressed as a goal, often no actual decision-making is required. Decision-makers may benefit from practice in making difficult decisions in complex situations.	A product that requires decision-making for it to progress would address this need.
The need to track interactions and information-sharing among players.	Does this tool provide the capability to visually depict information for different players' perspectives? And/or does this tool allow for tracking of others' actions during or after the T or E?	Examples: 1) a product that collects voice traffic and/or documents other types of interaction, e.g., document sharing, e-mail, etc.; 2) a product that allows a user to see who communicated with whom and how many messages were sent and not answered, etc.

Selected Functional Exercise Observations. Each product was rated on whether or not it allowed or could be used for the following needs:

Observation	Description	Example
The utility of simulation support	Using a simulation to help in the adjudication of decisions made during an exercise provides a link between decisions and outcomes.	Tools are customized to reflect real resources.

Selected FSE Observations. Each product was rated on whether or not it allowed or could be used for the following needs:

Observation	Description	Example
The utility of remote observation	In some FSEs, there were often too many non-players in the exercise area, and participants' response was compromised due to the fact that the realism of the exercise was reduced. If all, or most, persons in the exercise area are either responders or victims, it might induce a higher fidelity and sense of urgency for responders.	Web-cams, VTC would facilitate observation without intrusion.
The need for enhanced communication T&E that practices, trains, or exercises communications	In all of the TTXs and FSEs ThoughtLink observed, communication was always highlighted as an area that needed improvement. MS&G might be able to provide an environment where communications can be exercised with more frequency since players could work from home station in a distributed environment.	A product in which completion of each successive step requires successfully meeting all communication goals is a tool that would improve communication skills.
The need for increased focus on Hospital T&E	ThoughtLink observed a need for T&E directed specifically at Hospitals. During an FSE, the Hospital piece is rarely played out or is not given much focus. Hospitals are an essential element in response to a WMD incident.	Any product that can incorporate or is specifically directed at Hospital T&E

Selected New Concepts for Improving T&E. Each product was rated on whether or not it allowed or could be used for the following needs:

Observation	Description	Example
Part-Task Training	Isolating one or a few tasks from a more complex set of activities.	MS&G can allow a single user to practice one component of their response, without requiring others (e.g., a multi-agency team) to be present.
Pre-Training for TTX and FSE	The first exposure that many participants had to a WMD training event came at a TTX or FSE. Because of the complexity involved in such sophisticated exercises, participants sometimes appear to be overwhelmed.	MS&G can provide repeated practice at different experience levels prior to exercises.
The utility of distributed, collaborative, decision-making environments	Many of the exercise objectives involve the coordination of a number of individuals from different organizations and agencies that only have the opportunity to collaborate during FSEs.	Web based exercises are relatively inexpensive and can span geographic areas. Several trainees/participants, comprising a sub-team component could be engaged in the collaborative training/exercising remotely linked over a wide area network or the Internet for the training/exercise.
The need for measure of learning (retention) and transfer of learning	<p>The measurement of learning and retention is important in determining the specific training and/or exercising requirements for a community.</p> <p>Transfer of learning from the training situation to the real-world job is an especially important as is, effectively apply these skills to other situations.</p>	The possibility of more frequent T&E with MS&G allow for repeated performance measurements across trials and after time has elapsed to measure retention.

The following are the product descriptions for the MS&G products reviewed in this round of evaluations. The two- to four-letter abbreviations used in Section D have been added to most products, except for those already having a commonly used abbreviation.

Product Name: ADASHI First Response Automated Decision Aid System for Hazardous Incidents (ADFR)	
Company: Optimetrics, Inc. 2107 Laurel Bush Rd., Suite 209 Bel Air, Maryland 21015 Web site: www.ADASHI.org	Contact Info: Alex M. Menkes, Program Manager Optimetrics, Inc. 2107 Laurel Bush Rd, Suite 209 Bel Air, Maryland 21015 amenkes@ADASHI.org
Key Product Attributes:	
GOTS/COTS: COTS software and hardware; has elements of GOTS software. Application Environment: Exercise, Operational, and Analysis Media Scale: Individual Product Type: Electronic Simulation, Supporting Technology	Training Type it Supports: Possibly Awareness, Part-Task, TTX, and FE Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Health, and Public Safety Communication Primary Target Audience: First Responders, Commanders, Local Officials, State Officials, and Federal Officials
Product Description: ADASHI First Response is a stand-alone, off-the-shelf HAZMAT and terrorism incident public safety decision aid designed for first responders. The program is founded on well-known tools such as CAMEO and ERG 2000 and includes a sophisticated interface design to allow manual-free and training-free operations during life-threatening hazardous incidents. The software provides emergency responders, decision-makers, and support personnel with a user-friendly, intelligent PC-based tool to plan, mitigate, and track both large scale and daily hazardous incidents. Observations: Can be used for specific objectives, criteria, metrics; to audit and evaluate plans and procedures; and for increased decision-making.	
Version: 1.0 Date evaluated: August 28, 2003	

Product Name: ADASHI Professional Automated Decision Aid System for Hazardous Incidents (ADPR)	
Company: Optimetrics, Inc. 2107 Laurel Bush Rd., Suite 209 Bel Air, Maryland 21015 Web site: www.ADASHI.org	Contact Info: Alex M. Menkes, Program Manager Optimetrics, Inc. 2107 Laurel Bush Rd, Suite 209 Bel Air, Maryland 21015 amenkes@ADASHI.org
Key Product Attributes:	
GOTS/COTS: COTS software and hardware; has elements of GOTS software. Application Environment: Training, Exercise, Operational, and Analysis Media Scale: Individual, Group, Small multi-user team, and Large multi-user team Product Type: Electronic Simulation, Supporting Technology	Training Type it Supports: Awareness, Part-Task, Pre-training, Drills, TTX, FE, FSE, and Distributed Collaborative Exercise Functional Area(s) it Supports: EMS, EMA, Fire, possibly Govt. Administrator, possibly Health Care, HazMat, possibly Law Enforcement, possibly Public Health, and Public Safety Communication Primary Target Audience: First Responders, Commanders, Local Officials, State Officials, and Federal Officials
Product Description: <p>The Automated Decision Aid System for Hazardous Incidents (ADASHI) product line provides civil authorities responding to chemical, biological, radiological, nuclear, or explosive (CBRNE) events with an "over the shoulder" decision-support system to assist incident commanders in making better, timelier decisions by rapidly processing the multivariate input data and providing critical information in high-stress environments.</p> <p>ADASHI effectively integrates the specific technical functions required to mitigate both an everyday HAZMAT incident and an infrequent WMD event. The product features include hazardous agent identification, source analysis, physical protection of responders, decontamination, medical treatment, casualty care, resource and equipment monitoring/tracking, multi-tier communication, scenario-based planning and training, and EOC command and control displays.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; to audit and evaluate plans (plan development); for dissemination of best practices; and for increased decision-making.</p>	
Version: Under development Date evaluated: August 28, 2003	

Product Name: Automated Exercise and Assessment System (AEAS)	
Company: Science Applications International Corporation (SAIC) Web site: None	Contact Info: Richard Solomon 1209 Science Dr. Orlando, FL 32826-3248 solomonri@saic.com
Key Product Attributes:	
GOTS/COTS: GOTS Application Environment: Training, Exercise, and Analysis Media Scale: Individual, Small multi-user team, and Large Team multi-user team Product Type: Electronic Simulation	Training Type it Supports: Part-Task Training, Pre-Training, TTX, FE, FSE, FSE Reinforcement, and National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, and Transportation. Primary Target Audience: First Responders, Commanders, Local, and State Officials
Product Description: <p>Constructive simulation (war game) that exercises emergency response decision-makers in scenarios involving the use of WMD. It provides an interactive decision-making environment for responders at the incident scene and EOC. It allows training/exercising of the ICS and is customizable to reflect the community's tasks, operations (e.g., radio communications), and standards. Their actual response capabilities (e.g., resources) are used in the simulation and in automatically generated AAR.</p> <p>Observations: Specific objectives, criteria, metrics/measure of level of preparedness, audit and evaluation of plans and procedures prior to an exercise/Plan development, dissemination of best practices/expansion of learning benefits, tracking participant performance through multiple tries, decision-making, tracking interactions/information-sharing among players, simulation support, and enhanced communication.</p>	
Version: 1.0, March 31, 2003 Date evaluated: August 26, 2003	

Product Name: Biological Weapons Response Template (BWRT)	
Company: U.S. Army Soldier and Biological Chemical Command (SBCCOM) Gregg Mrozinski 410-436-2963 Web site: http://www.sbccom.army.mil www.ramsafe.com	Contact Info: RAMSAFE Technologies, Inc 3225 Shallowford Rd., Ste. 700 Marietta, GA 30062 800-477-8778 770-977-7233 info@ramsafe.com
Key Product Attributes:	
GOTS/COTS: GOTS Application Environment: Analysis Media Scale: Individual and Group Product Type: Instructor/Facilitator Aid	Training Type it Supports: Possibly TTX Functional Area(s) it Supports: EMA, Govt. Administrator, Health Care, Public Health, and Private Sector Primary Target Audience: Local Officials, State Officials, and Federal Officials
Product Description: <p>The biological weapons response template (BWRT) is a decision tree in paper format developed by SBCCOM for communities to use to evaluate their preparedness for a bioterrorism incident. The BWRT lists the response elements needed to respond to a biological attack. There are detailed response activities associated with each element of the template, formatted as worksheets that can be used by a community to develop their response plan.</p> <p>An automated version of BWRT is owned exclusively by RAMSAFE Technologies and is used as a component of their information management software designed for emergency managers. RAMSAFE calls it the bioterrorism response template and uses it to predict casualties and response/resource requirements for an incident.</p> <p>Observations: Can be used to audit and evaluate plans and procedures prior to an exercise (plan development), as a decision making tool, and possibly for Hospital Training and Exercises.</p>	
Version: N/A Date evaluated: August 29, 2003	

Product Name: BioSimMER (BSMR)	
Company: Sandia National Laboratories Mathematics and Computer Science Dept. 212 Williams Hall Ithaca College Ithaca, NY 14850 Web site: none	Contact Info: Sharon Stansfield 607-274-3630 Fax 607-274-1588 sstansfield@ithaca.edu
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Training, Exercise Media Scale: Individual and Small multi-user system (1-2 people) Product Type: Electronic Simulation	Training Type it Supports: Awareness, Part-Task Training and Pre-Training Functional Area(s) it Supports: Health Care and Public Health Primary Target Audience: First responders
Product Description: <p>Fully immersive virtual reality platform for training/exercising first responders in treating victims of a bioterrorism attack. The virtual patient is a dynamic, interactive simulation that presents clinical symptoms of the modeled injury and whose state changes realistically over time both spontaneously (due to injury) and in response to user actions, thus providing real-time feedback. It supports the manipulation of virtual objects, allowing users to act upon their environment. It features a voice recognition component, allowing the user to request information such as vital signs and to command certain actions (e.g., exposing the patient). The system has a recording capability that stores high-level actions along with a time stamp.</p> <p>Observations: Tracking participant performance through multiple tries (automation), utility of simulation support, Hospital Training and Exercises.</p>	
Version: Prototype, not yet in use. Date evaluated: August 14, 2003	

Product Name: Civil Emergency Reaction and Responder Training System (CERRTS)	
Company: Raytheon Company 621 Six Flags Drive, Suite 100 Arlington, TX 76011 Web site: http://www.raytheon.com	Contact Info: Kenneth R. Woodall Business Development Network Centric Systems 817-619-9465 Fax 817-619-9410 Kenneth_R_Woodall@Raytheon.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Training and Exercising Media Scale: Small and Large Multi-User Teams Product Type: Electronic Simulation	Training Type it Supports: Part-Task Training, Pre-Training, Drills, TTX, FE, FSE, FSE reinforcement Functional Area(s) it Supports: Commanders, Local, State, and Federal Officials Primary Target Audience: EMS, EMA, Fire, Government Admin, Health Care, HazMat, Public Health, and Public Works
Product Description: <p>Computer driven, emergency response and crisis rehearsal tool for training and exercising incident command and EOCs at various echelons of command. It consists of a Windows-based, menu-driven interface with embedded plume modeling capabilities. It features distributed mission planning capabilities and man-in-the-loop decision-making utilities with 2-D and 3-D interactive environments, alert and casualty notifications, AAR, and time-stamped recording of all activities.</p> <p>Observations: Audit and evaluate plans and procedures prior to an exercise/plan development, tracking participant performance through multiple tries (automation), decision-making, tracking interactions/information sharing among players, utility of simulation support, enhanced communication.</p>	
Version: 1.0 Date evaluated: August 14, 2003	

Product Name: Consequence Assessment Tool Set with Joint Assessment of Catastrophic Events (CATS-JACE)	
Company: Defense Threat Reduction Agency Consequence Assessment Branch (TDOC) 6801 Telegraph Rd. Alexandria, VA 22310-3398 Web site: http://cats.saic.com/	Contact Info: Tel.: (703) 325-6106 FAX (703) 325-0398 ACEhelp@dtic.mil
Key Product Attributes:	
GOTS/COTS: GOTS and COTS Application Environment: Training, Exercise, Operational, and Analysis Media Scale: Individual, possibly Group and Small Team Product Type: Student Learning Aid	Training Type it Supports: FSE, FSE Reinforcement, Distributed Collaborative Exercise, National Training Exercise Functional Area(s) it Supports: EMA, Govt. Administrator, HazMat, Law Enforcement, and Public Works Primary Target Audience: Commanders, Local Officials, State Officials, and Federal Officials
Product Description: <p>CATS-JACE is a decision support system for analyzing the consequences of man-made threats (CBRNE) and natural disasters (earthquakes and hurricanes). The target audience is U.S. government agencies and military commands, state and city emergency agencies, and commercial users. The system consists of a graphical user interface (GUI), geographic information system (GIS) mapping, simulation, and reporting features. ArcView provides the GIS mapping capability for analysis and display of predictions, consequence assessments, and resources. Simulation is performed by a large number of modeling packages. CATS-JACE is an integration layer that combines access to multiple models through a common GUI. Most access to external software and modeling code is transparent to the user, except for procurement of ArcView. The customer/user must obtain a copy of ArcView from ESRI separately, in order to run CATS-JACE.</p> <p>Observations: Can be used to audit and evaluate plans and procedures prior to an exercise; decision-making; simulation support.</p>	
Version: 4.60 Date evaluated: September 5, 2003	

Product Name: Disaster Response Board Game	
Company: Learning Landscapes Note: This company is no longer in business. The American Red Cross Disaster Services Program owns the Disaster Response Board Game. However, they did not return repeated phone calls concerning this review. Web site: www.learninglandscapes.com	Contact Info: Al Vliet, Manager Individual and Organizational Learning. Disaster Preparedness 202.303.8699 vlieta@usa.redcross.org
Key Product Attributes: Unknown at this time	
GOTS/COTS: Application Environment: Media Scale: Product Type:	Training Type it Supports: Functional Area(s) it Supports: Primary Target Audience:
Product Description: <p>According to the Learning Landscapes Web site: "the Disaster Response Board Game is a board game that simulates a moderate size disaster relief operation. The simulation is played over two days. ...the simulation allows participants to experience some of the key elements of a disaster relief operation from preparedness capabilities through to after-action analysis of the incident. Emphasis is on communication and the decision-making framework with quality service as the goal. Each game board requires 6-8 players. Up to four boards may be played simultaneously, for a maximum total of 32 participants. Participants are disaster leadership staff."</p> <p>"In the simulation, participants manage a relief operation for a flood that affects four communities. The primary decisions revolve around providing service to people affected by disaster, the human resources and training pipeline, the logistics pipeline, and information flow. The objectives of the simulation are to: manage the systems of a disaster relief operation; explain the importance of planning and preparedness activities; focus on problem-solving with quality service as a goal; and use resources wisely."</p> <p>The game has built-in mechanisms to track three main performance measures: quality service to clients, improvements in the community's capacity to handle future disasters, and relief operation costs. At the completion of the game, participants debrief first as a team, discussing their decisions around these quality measures and their effectiveness as individual leaders and as a team. Finally, all teams participate in a group debrief, which focuses on the impact of the underlying systems of any disaster relief operation.</p>	
Version: unknown Date evaluated: September 3, 2003	

Product Name: E Team (ETM)	
Company: E Team Web site: http://www.eteam.com	Contact Info: Charles Mancini 877-546-7892 x257 cmancini@eteam.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Operational Media Scale: Individual, Group, Small and Large Teams Product Type: Student Learning Aid and Instructor/Facilitator Aid	Training Type it Supports: TTX, FSE, Distributed Collaborative Exercise, and National Training Exercise Functional Area(s) it Supports: Commanders, Local Officials, and State Officials Primary Target Audience: EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Health, Public Works and Public Safety Communications
Product Description: <p>Browser based information management software that allows users to share a common operation picture in the form of standardized summaries, reports, requests, notifications, directives, annotated maps, and a resource tracking utility. It was designed to allow users to share information, make decisions, and deploy resources without being physically present at the EOC. Functionalities include resource management, action planning and personnel tasking, creation of directories and real-time messaging.</p> <p>Observations: Tracking participant progress through multiple tries; tracking interactions/information-sharing among players; enhanced communication Training and Exercise; distributed collaborative decision-making environment.</p>	
Version: 2.1 Date evaluated: August 14, 2003	

Product Name: Eagle Defender (EGLD)	
Company: McDonald Research Associates 120 University Park Dr., Suite 200 Winter Park, FL 32792 Web site: www.mrassociates.com	Contact Info: Dr. Bruce McDonald McDonald Research Associates 120 University Park Dr., Suite 200 Winter Park, FL 32792 bruce@mrassociates.com
Key Product Attributes:	
GOTS/COTS: COTS software and hardware Application Environment: Planning and training Media Scale: Individual, group, small multi-user team, large multi-user team Product Type: Electronic Simulation	Training Type it Supports: Pre-training, drills, TTX, FE, FSE, FSE Reinforcement, Distributed Collaborative Exercise, and National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, HazMat, Law Enforcement, and Public Health Primary Target Audience: Commanders, Local Officials, State Officials, Federal Officials
Product Description: <p>Eagle Defender is a desktop real-time computer simulation tool that allows leaders and decision-makers from multiple organizations to practice large- and small-scale incident responses without tying up large numbers of front line personnel. It is an outgrowth and expansion of Security Forces Distributed Mission Training technology developed for the Air Force. The tool simulates the incident, activities of the perpetrators, and activities of the assets (equipment and personnel) deployed by the incident response planners and decision-makers. With this tool, leaders can practice:</p> <ul style="list-style-type: none"> - Deploying assets to prevent or detect an incident. - Responding to reports from field personnel. - Deciding on courses of action and which assets to deploy in response. - Directing field personnel to execute the courses of action. - Requesting and providing assistance and assets from/to other jurisdictions, including military Civil Support Teams. <p>Observations: Can be used for specific objectives, criteria, metrics; to audit and evaluate plans prior to an exercise; for structured feedback among players; for decision-making; for tracking interactions/information sharing among players; and for enhanced communications T&E.</p>	
Version: 3.2 Date evaluated: August 28, 2003	

Product Name: Emergency Response Synchronization Matrix (ERSM)	
Company: Argonne National Laboratory Center for Integrated Emergency Prep. Building 900 9700 South Cass Avenue Argonne, IL 60439-4832 Web site: http://ersm.dis.an.gov/default.asp	Contact Info: Jacques Mitrani Associate Director Tel.: (630) 252-7087 Email: jacquesm@anl.gov
Key Product Attributes:	
GOTS/COTS: GOTS Application Environment: Training, Analysis, Operations (via output) Media Scale: Individual, Group Product Type: Computer-based training other than simulation	Training Type it Supports: Functional Area(s) it Supports: EMA, HazMat, Law Enforcement, and Public Works Primary Target Audience: Commanders, Local, State, and Federal Officials
Product Description:	
<p>The Emergency Response Synchronization Matrix is a software tool for planning emergency response processes that span multiple organizations and jurisdictions. Functionally, the product is a database with a GUI that produces process/information flow charts as its main output. It is a single PC platform planning system for incident response that supports individual or small group use.</p> <p>Observations: Uses specific metrics, can be used to audit plans, provides simulation support, and may be used for pre-exercise training.</p>	
Version: 2.1.1 (October 2002)	
Date evaluated: September 5, 2003	

Product Name: Fire Studio (FS2)	
Company: Digital Combustion, Inc 9121 Atlanta Ave., #705 Huntington Beach, CA 92646 800-884-8821 Web site: www.digitalcombustion.com	Contact Info: 9121 Atlanta Ave., #705 Huntington Beach, CA 92646 949-348-1120
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Training and Exercise Media Scale: Individual, Group, and Small multi-user team Product Type: Instructor/Facilitator Aid	Training Type it Supports: Part-Task Training, Pre-Training, TTX, and Full Scale Exercise Reinforcement Functional Area(s) it Supports: Fire and HazMat Primary Target Audience: First Responders and Commanders
Product Description: <p>Fire Studio is a versatile instructor aid that allows trainers to create fire scene simulations on a PC. This software program allows users to create their own simulations by adding animated smoke and fire to pictures of buildings, landscapes, planes, anything that can be photographed, even the inside of the building. Fire Studio is entirely customized; it allows customers to prepare for fires in their own city. Customers take pictures of structures, landscapes, planes, etc. in their own city and load it into the program. Users can bring in clip art and add equipment, fire hydrants, etc. Once the picture of the location of the fire is loaded into the program, users can select from a menu of different types of fire and smoke to create the simulation. The program includes HazMat cues such as the type of flames, smoke/vapor color, and thickness. Customers can also bring in sound files to simulate reality.</p> <p>Instructors can set up four monitors with a student at each monitor (each with a different view of the fire) and see how the students coordinate the response. Users do not interact with the program but rather with each other. The program allows the user to save and repeat simulations or change them in any way they want. Customers can also email the scenarios and share them with others who have the same software.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; to audit and evaluate plans and procedures (plan development); for increased decision making; and for simulation support.</p>	
Version: v. 2 Date evaluated: August 29, 2003	

Product Name: First Responders Situational Awareness Tool (FiRST)	
Company: ALION Science and Technology 1901 N. Beauregard St., Suite 400 Alexandria, VA 22311 703-933-3323 and 888-566-7672 Web site: www.msiac.dmsso.mil www.alionscience.com	Contact Info: 1901 N. Beauregard St., Suite 400 Alexandria, VA 22311 703-933-3323 msiac@msiac.dmsso.mil
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Exercise, Operational, and Analysis Media Scale: Individual and Group Product Type: Electronic Simulation and Instructor/Facilitator Aid	Training Type it Supports: Part-Task Training, Pre-Training, TTX, Full Scale Exercise Reinforcement, National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, HazMat, Law Enforcement, Public Health, Public Safety Communication, and Public Works Primary Target Audience: Commanders, Local Officials, State Officials, and Federal Officials
Product Description: <p>FiRST is a suite of programs/tools designed to make simulations more accessible and usable. It allows mission planning, rehearsal, and analysis. It can also be used operationally and provides information on demand about terrain and buildings.</p> <p>FiRST has a set of capabilities that include the 3-D Immersive models and panoramic views of building interiors, exteriors and surrounding areas, GIS capability, and 2-D topography with interactive simulation (usually JCATS). The user will see a 3-D image of a building they can navigate as well as a 2-D map of the same installation. The image and map are synchronized. The program can be used in planning response to particular incidents at specific locations in their community. FiRST is easy to use and only requires familiarity with Microsoft PowerPoint and Web browsers.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; to audit and evaluate plans and procedures (plan development) for increased decision-making; and for simulation support and Hospital Training and Exercises.</p>	
Version: v. 1.3 Date evaluated: September 11, 2003	

Product Name: Gaming and Multimedia Applications for Environmental Crisis Management Training (GAMMA-EC)	
Company: The GAMMA-EC Consortium TNO-FEL Oud Waalsdorperweg 63 2597 AK The Hague The Netherlands Web site: http://www.tno.nl/instit/fel/gamma_ec/index.html	Contact Info: Dirk Stolk Tel.: +31-70-374-0177 stolk@tno.fel.nd
T	
Key Product Attributes:	
GOTS/COTS: COTS+GOTS Application Environment: Training Media Scale: Individual, Group, Small Multi-user Team Product Type: Electronic Simulation, and Computer-based training other than simulation	Training Type it Supports: Pre-Training, FE, Distributed Collaborative Exercise Functional Area(s) it Supports: EMS, EMA, Fire, HazMat, Law Enforcement Primary Target Audience: Commanders
Product Description: <p>GAMMA-EC is a software application that provides a combination of multimedia educational content for self-paced training and an interactive crisis simulation for team training of emergency management staff. Users may access the system either by means of a local area network (intranet) or by the Internet. Two training modules included in the prototype version address chemical spills and forest fires, whereby trainees make decisions based on visual, text, and audio cues on a 2-D terrain map to respond to the given crisis. A key feature of GAMMA-EC is the built-in testing and performance measurement of trainees.</p> <p>Observations:</p> <p>Uses specific objectives, may be used to disseminate best practices and track participant performance, provides structured feedback among players and simulation support, and offers a distributed collaborative decision-making environment.</p>	
Version: Prototype Date evaluated: September 15, 2003	

Product Name: Groove (GRV)	
Company: Groove Networks, Inc 877-747-6683 Web site: http://www.groove.net	Contact Info: http://www.groove.net/about/contact.html 877-747-6683 info@groove.net
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Operational Media Scale: Small multi-user team and Large multi-user team Product Type: Student Learning Aid and Instructor/Facilitator Aid, Supporting Technology	Training Type it Supports: Possibly Planning and Management and Integrated Systems Functional Area(s) it Supports: Possibly EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication, Public Works, Transportation, and Private Sector Primary Target Audience: Possibly Commanders, Local Officials, State Officials and Federal Officials
Product Description: <p>This product is designed to support online collaboration among multiple users in different geographic locations. This is a generic collaboration product designed for business use. It is not designed explicitly for training or exercises, and thus there is no existing training or exercise content.</p> <p>Given the flexible distributed collaboration methods it supports, Groove could be used in a variety of trainings or exercises involving multi-agency or intra-agency coordination and planning. Digital scenario elements (text or video) could be sent to participants via email or communicated via text chat/messaging. Participants could work on the scenario by communicating with each other and/or reviewing plans and other materials stored in the virtual workspace or on the Web. Digital communications can be archived and analyzed for AARs.</p> <p>Persistent workspaces can also be useful for T&E planners and developers. Scenario elements, agendas, briefings, etc. can be developed, saved, and stored for later use, and materials can be easily found and reviewed by other planners. Best practices and case studies can be stored in the shared environment with easy accessibility to Groove users. Users can communicate with each other synchronously (in real time) or asynchronously (at different times) using a variety of interactive tools.</p> <p>Observations: Can be used for dissemination of best practices and tracking interactions/information sharing among players; enhances communication and is a distributed collaborative decision-making environment.</p>	
Version: v 2.5 Date evaluated: June 26, 2003	

Product Name: Guard Force (GF)	
Company: Semi Logic Entertainments, Inc. for the National Guard 9434 Deschutes Rd., Ste. 200 Box 923 Palo Cedro, CA 96073 530-547-3730 Web site: http://www.1800goguard.com/guardforce/info.asp www.semilogic.com	Contact Info: Glen Thompson, V.P. 530-547-3730 1-800-GO-GUARD glen@semilogic.com
Key Product Attributes:	
GOTS/COTS: GOTS Application Environment: Entertainment Media Scale: Individual Product Type: Game	Training Type it Supports: None Functional Area(s) it Supports: None Primary Target Audience: None with respect to DP T&E
Product Description: <p>Guard Force is a computer game developed by Semi Logic Entertainments, Inc. for the National Guard in its effort to market the Guard to recruits. It is a single-player, real-time strategy game that requires a user to build and defend a military base and perform other tasks that reflect National Guard missions. There are six missions for a player to complete including the training mission. The other missions are Flood Relief, Covert Strike, Embassy Escape, Base Protection, and Overthrow General. It is not a single-shooter game, although one can order individual troops (e.g., snipers) to fire on the enemy. Building the base starts with a Headquarters building, after which a player can add other types of buildings such as supply depots. Buildings can only be constructed if there are enough supplies. The cost of each building is provided. Each building has specific units attached to it (the Rotary Air Center deploys helicopters). The player can move units and troops around as well as buildings and supplies. An enemy army will attack the base and troops in each mission except for Flood Relief. Guard Force was created with a limited budget to allow the National Guard to evaluate its effectiveness. It is currently being revised and improved as the Guard has found it a useful element in their recruitment efforts.</p> Observations: None	
Version: v. 2002 Date evaluated: August 28, 2003	

Product Name: Hazard Prediction and Assessment Capability (HPAC)	
Company: Defense Threat Reduction Agency (DTRA) Consequence Assessment Branch 8725 John J. Kingman Rd., MSC 6201 Fort Belvoir, VA 22060-6201 Web site: http://www.dtra.mil/td/acecenter/td_hpac.html	Contact Info: HPACHelp@dtic.mil Phone: (703) 325-6106 FAX: (703) 325-0398
Key Product Attributes:	
GOTS/COTS: GOTS Application Environment: Training, Exercise, Operations, Analysis Media Scale: Individual Product Type: Student Learning Aid, Supporting Technology	Training Type it Supports: FE, FSE, FSE Reinforcement, Distributed Collaborative Exercise, National Training Exercise Functional Area(s) it Supports: EMA, Govt. Administrator, HazMat, Public Health, and Public Works Primary Target Audience: Commanders, Local, State and Federal Officials
Product Description: <p>HPAC is software code that models CBRNE dispersion and potential affects on civilian and military populations in local to regional areas. It can be used as a standalone system (via GUI) or can be integrated into other HLA-compliant systems (e.g., CATS – Consequence Assessment Tool Set). HPAC models atmospheric turbulence using SCIPUFF (second order closure, Lagrangian puff), and contains six incident and source term description modules for nuclear, biological, and chemical facilities and weapons. HPAC can access weather observation data from Meteorological Data Servers maintained by DTRA, or import standard weather reports for model predictions.</p> <p>Observations: Can be used to audit plans, and provides simulation support.</p>	
Version: 4.0 Date evaluated: September 9, 2003	

Product Name: Hybrid Particle And Concentration Transport Model (HYPACT)	
Company: ATMET, LLC PO Box 19195 Boulder, CO 80308-2195 Web site: www.atmet.com	Contact Info: Craig Tremback ATMET, LLC PO Box 19195 Boulder, CO 80308-2195 tremback@atmet.com
Key Product Attributes:	
GOTS/COTS: COTS and GOTS software; COTS hardware Application Environment: Operational, and Analysis Media Scale: Individual, group, small multi-user team, large multi-user team Product Type: Electronic Simulation, Supporting Technology	Training Type it Supports: Awareness, Part-Task, Pre-training, drills, TTX, FE, FSE, FSE Reinforcement, Distributed Collaborative, National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication Primary Target Audience: First Responders, Commanders, Local Officials, State Officials, Federal Officials
Product Description:	
HYPACT represents a state-of-the-art methodology for predicting the dispersion of air pollutants in 3-D, mesoscale, and time-dependent wind and turbulence fields. HYPACT allows assessment of the impact of one or multiple sources emitted into highly complex local weather regimes, including mountain/valley and complex terrain flows, land/sea breezes, urban areas, and other situations in which the traditional Gaussian-plume based models are known to fail.	
Observations: Can be used for decision-making and simulation support.	
Version: 1.3	
Date evaluated: August 28, 2003	

Product Name: JANUS	
Company: National Simulation Center 410 Kearny Avenue Fort Leavenworth, KS 66027-1306 Web site: www-leav.army.mil/nsc/famsim/janus/index.htm	Contact Info: Joe Whitworth, JANUS Team Leader National Simulation Center 410 Kearny Avenue Fort Leavenworth, KS 66027-1306 whitworth@leavenworth.army.mil
Key Product Attributes:	
GOTS/COTS: GOTS software; COTS hardware Application Environment: Training and exercise simulation Media Scale: Group, small multi-user team, large multi-user team Product Type: Electronic Simulation	Training Type it Supports: Awareness, Pre-training, Drills, TTX, FE, FSE, FSE Reinforcement, National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication, Public Works Primary Target Audience: First Responders, Commanders, Local Officials, State Officials, Federal Officials
Product Description: <p>JANUS is an interactive, stochastic, ground combat simulation featuring precise color graphics. "Interactive" refers to the interplay between the military personnel who decide what to do in crucial situations during simulated combat and the systems that model that combat. Up to six sides may be simulated. The disposition of opposing sides is largely unknown to the players in control of a side. "Stochastic" refers to the way the system determines the results of actions like direct fire engagements, according to the laws of probability and chance. "Ground combat" means that the principal focus is on ground maneuver and artillery units. JANUS also models weather and its effects, fixed wing aircraft, resupply, and a chemical environment.</p> <p>JANUS has been used to support WMD civilian training and exercising in various locales, under the auspices of the State National Guards.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; to audit and evaluate plans and procedures prior to an exercise; for decision-making; and for simulations support.</p>	
Version: 7.2 Date evaluated: August 28, 2003	

Product Name: Joint Conflict and Tactical Simulation (JCATS)	
Company: Auburn University Emergency Response and Homeland Security Training Program 410 Green Hall Annex Auburn University, AL 36849-5532 Web site: http://www.jwfc.jfcom.mil/about/fact_jcats.htm	Contact Info: Dr. Paul Waggoner Program Manager Tel.: 334-844-4541 Email: waggolp@auburn.edu
Key Product Attributes:	
GOTS/COTS: GOTS Application Environment: Training, Exercising, Analysis Media Scale: Small and Large Multi-user Team, Multi-Agency Participation Product Type: Electronic Simulation	Training Type it Supports: Pre-training, FE, FSE, Distributed Collaborative Exercise Functional Area(s) it Supports: EMS, EMA, Govt. Administrator, HazMat, Law Enforcement, Public Safety Communication, and Public Works Primary Target Audience: First Responders, Commanders, Local, State and Federal Officials
Product Description: <p>JCATS is an interactive, high- resolution, entity-level war fighter simulation that represents air, ground, and sea-borne combat between discrete and aggregate units on a digitized polygonal terrain. The system is a constructive simulation used to drive exercises and rehearse missions ranging from small teams to joint task force level. Besides combat scenarios, JCATS can simulate exercises for drug interdiction, disaster relief, peacekeeping, counter-terrorism, hostage rescue, and site security. The system is currently being adapted by multiple organizations to meet new needs with respect to theater-level combat simulation (the JCATS-JTLS federation effort), and to civil emergency response simulation. Intended uses are for planning and rehearsal, training and exercises, experimentation, and analysis.</p> <p>Observations: Can be used for specific objectives and to audit plans, tracks participant performance, can increase decision making skills, provides simulation support, can be used for pre-training, and can operate in a distributed collaborative environment.</p>	
Version: 4.0 (October 2002) Date evaluated: September 10, 2003	

Product Name: Joint Theater Level Simulation (JTLS)	
Company: Roland and Associates Corp. 500 Sloat Avenue Monterey, CA 93940 Web site: www.rolands.com	Contact Info: Dr. Ronald J. Roland, President 500 Sloat Avenue Monterey, CA 93940 President@rolands.com
Key Product Attributes:	
GOTS/COTS: COTS and GOTS software; COTS hardware Application Environment: Training, exercising, and analysis Media Scale: Individual, group, small multi-user team, large multi-user team Product Type: Electronic Simulation	Training Type it Supports: Awareness, Part-Task, TTX, FE, FSE, FSE Reinforcement, Distributed Collaborative, National Training Exercise Functional Area(s) it Supports: EMS, EMA, Health Care, Public Health Primary Target Audience: Commanders, Local Officials, State Officials, Federal Officials
Product Description:	
<p>JTLS system is an interactive, multi-sided war gaming system that models a joint and coalition force air, land, and naval warfare environment. Its purpose is as a tool for use in the development and analysis of joint warfighting operation plans, including:</p> <ul style="list-style-type: none"> - Combat planning analysis tool. - Support material for education. - Exercise support for training. - Means to investigate the results of combat. <p>The JTLS system consists of six major programs and numerous smaller support programs that work together to prepare the scenario, run the game, and analyze the results. Designed as a tool for use in the development and analysis of operation plans, the model is theater independent and does not require knowledge of programming. The JTLS system operates on a single computer or on multiple computers, either at a single or at multiple distributed sites.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; to audit plans or track participant performance; can increase decision-making skills; provides simulation support; and for enhanced communication T&E.</p>	
Version: 2.5	
Date evaluated: August 28, 2003	

Product Name: Various Products from LifeLine Videos (LLV)	
Company: LifeLine Videos PO Box 66303 Seattle, WA 98166-0303 Web site: www.lifelinevideos.com	Contact Info: Toll Free: 800-571-6433 (Continental US Only) Phone: 206-244-4615 Fax Orders: 206-244-4615 info@lifelinevideos.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Training Media Scale: Individual and Group Product Type: Instructor/Facilitator Aid	Training Type it Supports: Equipment Training and Awareness Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication, and Public Works Primary Target Audience: First Responders
Product Description: LifeLine Videos is a company that provides training videos, slides, CDs, instructor manuals, and workbooks for first responders. It is designed to be a one-stop shop providing many training choices. ThoughtLink previewed videos of the Overview of the Incident Command System, Implementing the ICS at HazMat incidents, and an EMS video concerning soft tissue and muscular-skeletal damage. ThoughtLink also previewed a CD-ROM that included PowerPoint presentations for equipment training (The Automated External Defibrillation Training (AED) Program). LifeLine has more than 60 EMS/First Aid videos, more than 70 Fire videos, more than 35 HazMat videos, and 7 video trainings devoted to terrorism. All videos are designed for use by trainers/facilitators and for incorporation into pre-existing training programs for first responders. The videos are not designed to be standalone trainings. There are seven terrorism awareness videos: First Response, Biological Agents, Chemical Agents, Explosives (bomb threats), Medical Response, Anthrax, and a Roll Call edition reviewing the material in the other six videos. Each video comes with an instructor's manual and provides awareness level information on its particular topic. The Web site lists an additional training video in the terrorism series (Explosive and Incendiary Weapons) that was not on the preview tape. There are videos dealing with additional chemical agents in the HazMat Video collection. Observations: Can be used for specific objectives, criteria, metrics; and for Hospital Training and Exercises.	
Version: N/A	
Date evaluated: September 5, 2003	

Product Name: Mass Casualty Medical Training and Evaluation Services (MMTE)	
Company: SAIC (Science Applications International Corporation) Web site: http://www.saic.com/natsec/homeland-security/casualty-medical-evaluation.html	Contact Info: Mike Congleton 10260 Campus Point Drive, MS D5 San Diego, CA 92121 858-826-7281 congletonm@saic.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Exercise Media Scale: Small and Large Team Product Type: Non-electronic Simulation	Training Type it Supports: TTX, FSE Functional Area(s) it Supports: First Responders and Commanders Primary Target Audience: EMS, Health Care and Public Health
Product Description: <p>In-the-field medical training (simulated crisis event) for exposure to chemical, radiological, and biological hazards. Users practice treating simulated trauma victims (actors or mannequins) of WMD. All training is done under typical time/pressure constraints and is performed on the equipment used in an actual crisis. It is currently in use by all branches of the military and is also available to civilian emergency responders. It features a number of patient algorithms that address care beginning with the first responder, through stabilization, up to the victim's definitive care. The live training/exercise is monitored by observer/evaluators who note user behavior (either on paper-based evaluation sheets or via an electron-pen-based system) and prompt for action based on victim algorithms. MMTE provides for assessment of command, control, logistics, transportation, and support services. It integrates evaluations, training, and management of casualties.</p> <p>Observations: Specific objectives; criteria, metrics/measure or level of preparedness; decision-making, simulation support, and Hospital Training and Exercises.</p>	
Version: N/A Date evaluated: September 3, 2003	

Product Name: Meteorological Information and Dispersion Assessment System - Anti-Terrorism (MIDAS-AT)	
Company: Research Place Suite 200A Rockville, MD 20850 Web site: www.absconsulting.com	Contact Info: Keith Woodard Research Place Suite 200A Rockville, MD 20850 kwoodard@absconsulting.com
Key Product Attributes:	
GOTS/COTS: COTS software and hardware Application Environment: Operational, and analysis Media Scale: Individual, group, small multi-user team, large multi-user team Product Type: Electronic Simulation, Supporting Technology	Training Type it Supports: Awareness, Part-Task, Pre-training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed Collaborative, National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication, Public Works Primary Target Audience: First Responders, Commanders, Local Officials, State Officials, Federal Officials
Product Description: MIDAS-AT models radiological, industrial chemical, and chemical and biological agent releases to the atmosphere, inside buildings, and in urban terrain environments. It also has the capability to collect digital data from sensors and to provide appropriate alarms and displays. MIDAS-AT contains: <ul style="list-style-type: none"> - All atmospheric releases. - 5 minute auto updates. - GUI. - Universal GIS (US and World). - Flat terrain, complex terrain and urban models. - Inside-building releases. Observations: Can be used for specific objectives, criteria, metrics, decision-making, and simulation support.	
Version: 1.7.09 Date evaluated: August 28, 2003	

Product Name: Minerva (MINV)	
Company: Metropolitan Police Service Centre for Applied Learning Technologies (CALT) Peel Centre Aerodrome Road Hendon London NW9 5JE United Kingdom Web site: http://www.minerva-hydra.org.uk	Contact Info: +44 (0)20 8358 1145 +44 (0)20 8358 1370/2 +44 (0)20 8358 1376 fax
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Exercise and Analysis Media Scale: Small multi-user team Product Type: Electronic Simulation, Instructor/Facilitator Aid	Training Type it Supports: Awareness, Part-Task Training, Drills, FE, FSE Reinforcement Functional Area(s) it Supports: EMS, Fire, HazMat, Law Enforcement, Public Safety Communication Primary Target Audience: Commanders
Product Description:	
<p>Minerva is a real-time computer simulation system that runs across a network enabling the training of command teams. Minerva simulates large-scale, often critical, policing incidents affording teams of commanders the opportunity to practice command skills such as scene assessment and management, coordination, communication, and problem-solving. Minerva puts the student in a real-life situation by simulating conditions via audio and video. Students typically work in teams and see those incidents and events specific to their command position and location. Other command teams may be working elsewhere at the simulated event (and accordingly, elsewhere on the Minerva network). Each of these individual and specific incidents is part of the larger incident being simulated. All communication and decisions are recorded and synchronized with the video playing at that time and available for re-play and analysis during the AAR. Minerva is run by controllers and not by the computer; in that sense it is like a FSE where controllers enter injects and change the scenario as the event unfolds.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; for dissemination of best practices; for tracking of participant performance; for increased decision-making; for tracking interactions and information sharing among players; for simulation support; for enhanced communications; and in a distributed collaborative decision-making environment.</p>	
Version: N/A	
Date evaluated: September 11, 2003	

Product Name: National Security Network (NSN)	
Company: Boeing-Autometric 7702 Boston Rd. Springfield, VA 22153 Web site: http://www.autometric.com/	Contact Info: Marcy Lewis Tel.: 703-270-6687 Marcia.a.lewis@boeing.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Training and Exercise Media Scale: Small and Large Multi-user Teams Product Type: Instructor/Facilitator Aid, Student Learning Aid, Supporting Technology	Training Type it Supports: Awareness, TTX, Distributed Collaborative Exercise, National Training Exercise Functional Area(s) it Supports: Government Administration, Public Safety Communication Primary Target Audience: Federal Officials
Product Description: <p>The National Security Network (NSN) is an exercise tool that combines a content management system and a master scenario event list scheduler (MSEL). It is a set of HTML coded Web pages and templates, combined in a single user interface and hosted on a LAN. It is used to drive a classroom exercise via scenario injects. The NSN is currently used to support an annual simulation exercise at the National Defense University regarding policy decision-making in national/international security matters. The software application is accessed through a standard Web browser (MS Explorer), providing an integrated gateway for instructors, staff, and students to the MSEL and reference information, as well as providing associated software applications for data retrieval, editing, email, and other functions.</p> Observations: Can increase decision-making skills and provides simulation support.	
Version: Not applicable. Date evaluated: September 5, 2003	

Product Name: OpsCenter (OPSC)	
Company: Alert Technologies Corporation 7709 Wexford Way Port St. Lucie, FL 34986 Web site: http://www.alerttech.com/products_main.htm	Contact Info: Joseph Santamaria Vice President Business Development 7709 Wexford Way joseph.santamariajr@alerttech.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Operational Media Scale: Individual, Group, Small and Large Multi-User Team Product Type: Student Learning Aid and Instructor/Facilitator Aid	Training Type it Supports: N/A (operational tool) Functional Area(s) it Supports: Commanders, Local Officials, and State Officials Primary Target Audience: EMS, EMA, Fire, Govt. Administrators, Health Care, HazMat, Law Enforcement, Public Safety Communications, Public Health, and Public Works
Product Description: Real-time, Internet based, information management system designed for use during actual emergencies (i.e., Operational Tool). It was designed to aid organization of response details electronically and to replace chalkboards, grease boards, flip charts, and paper updates. Users assume their normal roles, and tasks can be managed via chronologically arranged checklists (requires user input/update; i.e., not automatic). Observations: Tracks interactions/information-sharing among players; enhanced communication; distributed collaborative decision-making environment.	
Version: 2.3 with Service Pack 1 Date evaluated: August 25, 2003	

Product Name: Post-Engagement Ground Effects Model (PEGEM)	
Company: BAE Systems Inc. Web site: http://www.mevatec.com/pegem/main.htm	Contact Info: William Moore 1525 Perimeter Parkway Huntsville, AL 35806 256-890-8071 William.k.moore@baesystems.com
Key Product Attributes:	
GOTS/COTS: GOTS Application Environment: Training, Exercising, Operational and Analysis Media Scale: Individual, Small and Large Multi-User Team Product Type: Electronic Simulation, Supporting Technology	Training Type it Supports: Pre-Training, Drills, TTX, FE, Distributed Collaborative Exercise, and National Training Exercise. Functional Area(s) it Supports: First Responders, Commanders, Local Officials, State Officials and Federal Officials. Primary Target Audience: EMS, EMA, Fire, Government Admin, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications and Public Works.
Product Description: Tool that models the hazard effects (3-D) of chemical, biological, and high explosive effects. It incorporates digital terrain and weather data. Applications include missiles, battlefield weapons, and storage facilities. It also provides predictions of urban setting transport, contamination footprints, evacuation routes, and backtrack of sensor readings of two or more separate unknown locations. It has built in spatial GPS data for the planet and urban GIS for Washington D.C., Chicago, Anytown USA, and Baghdad (any urban terrain can be modeled per user's request). Observations: Audits and evaluates plans and procedures prior to an exercise/plan development; decision-making; simulation support; distributed collaborative decision-making environment.	
Version: 5.0 Date evaluated: August 25, 2003	

Product Name: QUIC (Quick Urban and Industrial Complex) Dispersion Modeling System	
Company: Los Alamos National Laboratory Los Alamos, NM 87545 Web site: www.lanl.gov/source/orgs/d/d4/atmosphere/chbio.html	Contact Info: Michael Brown Group D-4 Mail Stop F604 Los Alamos National Laboratory Alamos, NM 87545 mbrown@lanl.gov
Key Product Attributes:	
GOTS/COTS: GOTS software, COTS hardware Application Environment: Operational, planning and analysis Media Scale: Individual, group, small multi-user team, large multi-user team Product Type: Electronic Simulation, Supporting Technology	Training Type it Supports: Awareness, Part-Task, Pre-training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed Collaborative, National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication, Public Works Primary Target Audience: First Responders, Commanders, Local Officials, State Officials, Federal Officials
Product Description:	
<p>QUIC is an urban fast-response transport and dispersion modeling system (i.e., plume model) that computes the three-dimensional wind patterns and dispersion of airborne contaminants around clusters of buildings. The system is composed of the following:</p> <ul style="list-style-type: none"> - Graphical user interface (QUIC-GUI). - Wind model (QUIC-URB). - Dispersion model (QUIC-PLUME). <p>The system runs quickly (generally in real time) on a laptop computer. This type of model can support real-time applications, such as analysis, classroom instructor's aid, and training/exercising scenarios.</p> <p>QUIC is intended for use in planning, assessment, and emergency response scenarios.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; to audit plans and procedures prior to an exercise; for increased decision-making; and for simulation support</p>	
Version: 2	
Date evaluated: August 28, 2003	

Product Name: RAMSAFE	
Company: RAMSAFE Technologies 9434 Deschutes Rd., 3225 Shallowford Rd., Ste. 700 Marietta, GA 30062 800-477-8778 770-977-7233 770-579-5955 fax Web site: www.ramsafe.com	Contact Info: 3225 Shallowford Rd., Ste. 700 Marietta, GA 30062 800-477-8778 770-977-7233 770-579-5955 fax info@ramsafe.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Exercise, Operational, and Analysis Media Scale: Small multi-user team and large multi-user team, multi agency participation Product Type: Instructor/Facilitator Aid	Training Type it Supports: Pre-Training, TTX, FSE Reinforcement, Distributed Collaborative Exercise, and National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, Government Admin, HazMat, Law Enforcement, Public Health, Transportation, Public Works, and Private Sector Primary Target Audience: Commanders, Local Officials, State Officials, and Federal Officials
<p>Product Description: RAMSAFE is a real-time software database management tool that can be used at all phases of an incident: pre-incident planning and preparation, incident response, and recovery. RAMSAFE acts as a framework and repository of information that is populated by the customer. Users can create one or multiple Web portals and secure access to specific people. RAMSAFE provides live updates, which can be accessed via the Web portal.</p> <p>RAMSAFE includes the bioterrorism response template, which predicts casualties and response/resource requirements for an incident. It can forecast events based on different sets of variables, such as biological agent, number of infected individuals, available medical resources, and community population.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; to audit and evaluate plans prior to an exercise for dissemination of best practices; for decision-making; for tracking interactions/information sharing among players; for enhanced communication T&E; for Hospital Training and Exercises; and in a distributed collaborative decision-making environment.</p>	
Version: Date evaluated: September 11, 2003	

Product Name: Regional Atmospheric Modeling System (RAMS)	
Company: ATMET, LLC PO Box 19195 Boulder, CO 80308-2195 Web site: www.atmet.com	Contact Info: Craig Tremback ATMET, LLC PO Box 19195 Boulder, CO 80308-2195 tremback@atmet.com
Key Product Attributes:	
GOTS/COTS: COTS and GOTS software; COTS hardware Application Environment: Operational, and Analysis Media Scale: Individual, group, small multi-user team, large multi-user team Product Type: Electronic Simulation, Supporting Technology	Training Type it Supports: Awareness, Part-Task, Pre-training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed Collaborative, National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication Primary Target Audience: First Responders, Commanders, Local Officials, State Officials, Federal Officials
Product Description:	
<p>RAMS is a highly versatile numerical code originally developed by scientists at Colorado State University and the *ASTER division of Mission Research Corporation for simulating and forecasting meteorological phenomena, and for depicting the results. The RAMS model generates predicted weather data over time periods ranging from seconds to years, for various area sizes and topography, and at high grid resolutions (e.g., 500-meter and higher resolution grids). The database generated by RAMS can be used to specify weather conditions at specific predicted times or can act as inputs to dispersion models (i.e., plume models). Hence, RAMS can be used as an operational tool, an analysis tool, and as a training tool (alone, or integrated with other simulation tools).</p> <p>Observations: Can possibly be used for specific objectives, criteria, metrics, and simulation support.</p>	
Version: 4.4	
Date evaluated: August 28, 2003	

Product Name: Response Information Folder System (RIFS)	
Company: ALION Science and Technology 1901 N. Beauregard St., Suite 400 Alexandria, VA 22311 703-933-3323 703-933-3325 fax 888-566-7672 Web site: www.msiac.dmsso.mil www.alionscience.com	Contact Info: ALION Science and Technology 1901 N. Beauregard St., Suite 400 Alexandria, VA 22311 703-933-3323 703-933-3325 fax 888-566-7672 msiac@msiac.dmsso.mil
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Exercise, Operational, and Analysis Media Scale: Individual and Group Product Type: Electronic Simulation, Instructor/Facilitator Aid	Training Type it Supports: Part-Task Training, Pre-Training, TTX, and FSE Reinforcement, Multiple Agency Participation Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, and the Private Sector Primary Target Audience: Commanders, Local Officials, State Officials, and Federal Officials
Product Description: <p>RIFS was designed to implement the Los Angeles County Sheriff's Department of Terrorism Early Warning Group's 23 target folder information categories. It integrates 3-D immersive images of terrain and buildings with critical information about specific buildings and locations. RIFS can be used for response planning, course of action analysis, operations, and training. It provides key information that first responders want in an incident such as, a response resource list and information on surrounding microclimates (winds), which helps with planning evacuations. The resource list has detailed information about a site or a building and what is nearby. Playbooks listing standardized practices and procedures for various incidents can be linked through RIFS.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; to audit and evaluate plans and procedures prior to an exercise; for decision-making and simulations support; and for Hospital Training and Exercises.</p>	
Version: v. 1.7 Date evaluated: September 25, 2003	

Product Name: S3 Exercise (S3)	
Company: International Safety Research Inc. (ISR) 457-A Sussex Dr, 2 nd floor Ottawa, Ontario Canada K1N 6Z4 530-547-3730 Web site: www.i-s-r.ca	Contact Info: Francois Lemay, Director ISR 613-241-4884 fax: 613-241-1250 cell: 613-282-4885 FrancoisLemay@i-sr.ca
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Training and Exercise Media Scale: Group, Small Team, Large Team Product Type: Electronic Simulation, Student Learning Aid	Training Type it Supports: Part-Task Training, Drills, TTX, FE, FSE, Distributed Collaborative Exercise Functional Area(s) it Supports: EMA, Govt. Administrator, HazMat, Public Health, Public Safety Communications, and Public Works, Possibly Law Enforcement and Fire Primary Target Audience: First Responders, Commanders, Local Officials, State Officials, and Federal Officials
Product Description: <p>S3-Exercise is a PC-based computer simulation that can be used as a tool by controllers or trainers during a radiological table top, full scale, or functional exercise. Users can create a simulated radiological incident by choosing the location and time of release, as well as amount of radiation released, the shape of the plume, and duration of the event. Users can also choose meteorological conditions that will affect the plume over time. There is an option for deposition of environment such as open grassland or an urban area. Typically users purchase International Safety Research Inc. (ISR) maps of their community to be used with the program. Therefore, users can produce simulated radiological releases over any part of the community. With this program, a real-time drill can be created in less than one hour. Traditionally, drills featuring radiological dispersion devices were time-consuming to create as someone had to do all of the calculations that create the instrument readings and the scenario.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; to audit and evaluate plans and procedures prior to an exercise; for decision-making; for simulation support; and for remote observation.</p>	
Version: Date evaluated: August 28, 2003	

Product Name: San Luis Rey (SLR)	
Company: Teleologic, for the Naval Postgraduate School P.O. Box 166 114 SW Arch St Atlanta IL 61723 21-/648-5077 Web site: http://www.teleologic.net	Contact Info: Craig Baldwin P.O. Box 25 Pomfret, CT 06258 860-963-7707 cbaldwin@teleologic.net
Key Product Attributes:	
GOTS/COTS: COTS and GOTS Application Environment: Operational Media Scale: Small multi-user team and Large multi-user team Product Type: Computer-based training other than simulation and Student Learning Aid	Training Type it Supports: Possibly Planning and Management and Integrated Systems Functional Area(s) it Supports: Possibly EMS, EMA, Fire, Govt. Administrators, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication, Public Works, Transportation, and Private Sector Primary Target Audience: Possibly Commanders, Local Officials, State Officials and Federal Officials
Product Description:	
<p>SLR is a hypothetical city that is used by several courses throughout the Naval Post-Graduate School (NPS) Homeland Security (HLS) master's degree program. Right now, the first generation of SLR consists of various 2-D maps and background information about the city, county, and two neighboring states. This information includes history of the area, information about personalities of key personnel, information about local services, and HLS plans for the city, county, and states.</p> <p>The curriculum is designed to move the students from tactical level thinking and decision-making to an operational/strategic level that focuses on policies and assessment vs. actions. San Luis Rey is implemented as a component of a network-based learning environment that includes a digital library, collaboration tools, and scenarios that rely on SLR information.</p> <p>Currently, SLR is used to promote discussion and decision-making among teams of students with a fixed environment and scenario elements layered over it.</p> <p>Observations: Can be used for tracking interactions/information sharing among players, enhances communication, and is a distributed collaborative decision-making environment.</p>	
Version: v 2.5	
Date evaluated: June 26, 2003	

Product Name: SEAS/Homeland Security Simulation	
Company: Simulex, Inc. Purdue Technology Center 3000 Kent Avenue West Lafayette, IN 47906 Phone: (765) 463-2690 Fax: (765) 463-2699 Web site: http://www.seasllc.com	Contact Info: Alok Chaturvedi, Ph.D. (Chief Technology Officer) Shailendra Raj Mehta, Ph.D. (Chief Economist) Phone: (765) 463-2690 Email: alok@simulexinc.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Exercise, Operational, Analysis, and possibly Training Media Scale: Individual, possibly Group, Small multi-user team and Large multi-user team Product Type: Electronic Simulation	Training Type it Supports: Part-Task Training, Pre-Training, TTX, FE, FSE Reinforcement, Distributed Collaborative Exercises, and National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, Government Admin, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication, Public Works, Transportation, and Private Sector Primary Target Audience: Commanders, Local Officials, State Officials, and Federal Officials
Product Description: SEAS is a flexible agent-based simulation that can be extensively customized by the user or developer. The simulation engine is integrated with multiple models: geography and infrastructure, mobility, well-being of people, epidemiological, radiological, and transportation to simulate a variety of incidents and their economic effects. SEAS allows integration across models, and effects can be intertwined across models including psychological models (simulates changes in behavior: panic, rioting, clustering, crowd behavior) at varying levels of detail, with a variable number of agents. Observations: Can be used for specific objectives criteria metrics; to audit and evaluate procedures and plans; for tracking interactions/information sharing among players; to enhance communication; for increased decision-making; and is a distributed collaborative decision- making environment.	
Version: v 2.5 Date evaluated: June 26, 2003	

Product Name: SimViz/3400ICS	
Company: STAR Technology Corporation 8003 Forbes Place, Suite 310 Springfield, VA 22151 Web site: http://www.startechcorp.com/structure.htm	Contact Info: Johnny Harper President and CEO jharper@startechcorp.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Training, Exercise, Analysis Media Scale: Individual, Small Multi-user Team Product Type: Electronic Simulation	Training Type it Supports: Awareness, Pre-Training Functional Area(s) it Supports: EMA, Fire, HazMat, Law Enforcement Primary Target Audience: Commanders
Product Description: <p>The SimViz/3400ICS simulator is a computer-based system that provides a synthetic environment in which structure-based emergency incidents are used to train emergency response command staff in the application of the ICS.</p> <p>The system can also be used to teach strike team leaders or division supervisors how to manage their response resources and make proper decisions based on the audiovisual cues they receive in a scenario.</p> <p>Observations:</p> <p>Uses specific metrics, tracks participant performance, provides structured feedback, and provides simulation support.</p>	
Version: 1.0 (Standard, Tailored, and Custom versions are available) Date evaluated: September 11, 2003	

Product Name: SoftRisk SQL (SOFR)	
Company: SoftRisk Technologies PO Box 20163 St. Simon Island, GA 31522 912-634-1700 912-638-3340 fax Web site: www.softrisk.com	Contact Info: Mr. Jim Fraser 613-241-4884 jfraser@softrisk.com techsupport@softrisk.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Operational and Analysis Media Scale: Large Team Product Type: Possibly Instructor/Facilitator Aid	Training Type it Supports: Can be used as an information management tool during an FE or FSE Functional Area(s) it Supports: EMS, EMA, Fire, Govt. Administrator, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, and Private Sector Primary Target Audience: Commanders, Local Officials, State Officials, and Federal Officials
Product Description: <p>SoftRisk is a real-time emergency management software program used operationally to help a command post manage information related to an incident. It assists responders in keeping track of events, resources, equipment, and people during an incident by managing a large database that is integrated with word processing, graphic files, and mapping. Users can manage emergency operations, create standardized data collection and reports, as well as manage resources and information about resources. The program creates an audit trail, which provides users with excellent data that can later be analyzed and used to improve response plans. Users enter information about events, equipment, and people in the database during an incident, allowing them to share information with other users on the network. Once information is entered into the program, it is immediately available to all users on the system. The database is designed to be incident-centric, and information is organized and linked to a particular incident as entered by a user, such as a flood.</p> <p>Observations: Can be used for specific objectives, criteria, metrics; to audit and evaluate plans and procedures prior to an exercise; for dissemination of best practices; and for decision-making.</p>	
Version: v. 5.1 SQL Date evaluated: September 2, 2003	

Product Name: SPECTRUM	
Company: Army Constructive Training Federation Directorate National Simulation Center Fort Leavenworth, KS Web site: http://www-leav.army.mil/nsc/famsim/spectrum/index.htm	Contact Info: Tony Medici Spectrum Chief Trainer Tel.: 913-684-8123 Email: Medicia@leavenworth.army.mil
Key Product Attributes:	
GOTS/COTS: GOTS Application Environment: Training, Exercise Media Scale: Small and Large Teams Product Type: Electronic Simulation	Training Type it Supports: Planning and Management, Integrated Systems Functional Area(s) it Supports: EMA, Fire, Govt. Administrator, HazMat, Law Enforcement, Public Health, and Public Works Primary Target Audience: Local, State and Federal Officials
Product Description: <p>Spectrum is a constructive simulation exercise system developed by the National Simulation Center to provide the Army command and control training in military operations other than war. The simulation has been used to drive WMD exercises for a state emergency operations center composed of state emergency management personnel and federal officials. In addition to modeling movement, combat, and logistics operations, Spectrum also models subjective political, economic, and socio-cultural activities that may affect security and anti-terrorism decision-making. Use of the system is limited to U.S. DoD and military users due to terrain generation data accessed from NIMA.</p> <p>Observations: Uses specific metrics and provides simulation support.</p>	
Version: 1.6.3 (14 November 2002) Date evaluated: September 5, 2003	

Product Name: STAT Care (STC)	
Company: RTI International Research Triangle Institute 3040 Cornwallis Rd. Research Triangle Park, NC 27709 Web site: http://www.patient-simulation.com/default.asp	Contact Info: Paul N. Kizakevich P.O. Box 12194 RTP, NC 27709 kiz@rti.org
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Training Media Scale: Individual Product Type: Electronic Simulation	Training Type it Supports: Part-Task and Pre-Training, Drills, FE Functional Area(s) it Supports: EMS Primary Target Audience: First Responders
Product Description: <p>Interactive, virtual-reality patient simulator that presents a scenario comprising a 3-D scene, an incident that produces trauma or medical conditions, and one or more patients. The caregiver can navigate and survey the scene, interact and converse with the virtual patient, use medical devices, administer medications, monitor diagnostic data, and perform interventions. It features case-base virtual scene scenarios and one or more patients, physiology that responds to trauma and treatment, integrated pharmacokinetic drug models, and assignable probability of critical conditions.</p> <p>Observations: Audit and evaluate plans and procedures prior to an exercise/Plan development; ; decision-making; simulation support; and Hospital Training and Exercises.</p>	
Version: 1.8.0 Date evaluated: August 26, 2003	

Product Name: TUTOR	
Company: BCD Modelling Ltd. Web site: http://www.bcd-modelling.com/tutor.html	Contact Info: Patrick Benham-Crosswell PO BOX 136, ALTON, Hampshire GU34 1YR paddy@bcd-modelling.com +44 1420 590110
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Training, Exercise, Analysis Media Scale: Small and Large Multi-User Teams Product Type: Electronic Simulation	Training Type it Supports: Part-Task Training, Pre-Training, Drills, and Table Top Functional Area(s) it Supports: EMA, Fire, HazMat, Law Enforcement, Health Care, and Public Safety Communications. Primary Target Audience: First Responders, Commanders, Local, State and Federal Officials.
Product Description: <p>Simulation designed for emergency services decision-makers to visualize and prepare for crisis management contingencies, such as public order and safety incidents and terrorist and firearms incidents. TUTOR was adapted from a military combat simulation developed by the UK government. It features terrain visualization, entities, activities carried out by entities, management/control of events, and operational analysis and debrief for providing assessments. It is designed for command staff and their subordinates to gain experience implementing contingency plans and experience carrying out plans despite unanticipated problems.</p> <p>Observations: Audit and evaluate plans and procedures prior to an exercise/plan development; track participant performance through multiple tries (automation); decision-making; simulated support; enhanced communications Training and Exercise.</p>	
Version: 2.0 Date evaluated: September 3, 2003	

Product Name: Virtual Cities (VCIT)	
Company: Institute for Defense Analyses 4850 Mark Center Drive Alexandria, VA 22311 Web site: http://virtualcities.ida.org	Contact Info: Mr. Robert Clover Tel.: 703-845-6087 clover@ida.org
Key Product Attributes:	
GOTS/COTS: GOTS Application Environment: Training, Exercise, Analysis Media Scale: Individual, Group. Small and Large Multi-user Teams Product Type: Electronic Simulation and Supporting Technology	Training Type it Supports: Awareness, Part-Task Training, Pre-Training, Drills, FE, FSE Reinforcement, Distributed Collaborative Exercise, National Training Exercise Functional Area(s) it Supports: EMS, EMA, Fire, HazMat, Law Enforcement Primary Target Audience: First Responders, Commanders
Product Description: Virtual Cities are high-resolution, geo-specific, immersive models of cities and select building interiors (where requested). The Virtual Cities are the synthetic environments used by manned training systems to permit the military and first responders to train in the mitigation of WMD incidents in their own locales. The product consists of software in the form of files that describe high definition, 2-D and 3-D environments that can be used for multiple purposes. Virtual Cities provide realistic, interactive 3-D environments for manned simulators; 2-D environments for scenario augmentation by way of the Semi-Automated Forces (SAF) applications and/or the VERTS Scenario Generation tool; and 3-D geometry for accurate 3-D plume dispersion modeling using computational fluid dynamics algorithms. Virtual Cities models have been integrated into prototype VERTS simulators and used by National Guard WMD Civil Support Teams to train in site reconnaissance, detection, and related training. Observations: Can be used to audit plans, provides simulation support, and operates in a distributed collaborative environment.	
Version: Specific cities and locales are available Date evaluated: September 5, 2003	

Product Name: Weapons of Mass Destruction Decision Analysis Center (WMD-DAC)	
Company: Sandia National Laboratory Advanced Concepts Group PO Box 969 MS 9201 Livermore, CA 94551-0969 Web site: None.	Contact Info: Howard Hirano Advanced Concepts Group Manager Tel.: (925) 294-2053 Email: hhhiran@sandia.gov
Key Product Attributes:	
GOTS/COTS: GOTS, potentially COTS Application Environment: Analysis Media Scale: Individual, Group, Small Team Product Type: Electronic Simulation	Training Type it Supports: TTX, Drills, Distributed Collaborative Functional Area(s) it Supports: EMA, Govt. Administrator, Public Health Primary Target Audience: Local, State and Federal Officials
Product Description: The WMD-DAC, in its current form, is a prototype planning and analysis system that addresses the early identification of public health threats. It eliminates “artificialities” by using actual health and census data to replicate the exact flux of patients in a given time period. The system is an interactive simulation, running in either a standalone or distributed mode, that models an anthrax attack. It requires the main user, in a public health officer role, to interpret hospital data and choose prophylaxis strategy. As a departure from typical deterministic tabletop exercises, the role player makes decisions that alter the outcome of the simulation (i.e., population morbidity and mortality are stochastic variables). The system is broadly applicable to state and local public health and emergency management agencies but requires actual health records to achieve the intended degree of realism. Observations: Uses specific metrics; can be used to audit plans; tracks participant performance; can increase decision-making skills; provides simulation support; provides a distributed collaborative decision-making environment.	
Version: Prototype Date evaluated: August 8, 2003	

Product Name: Web EOC Standard (WEOC)	
Company: Esi®--Emergency Services Integrators 699 Broad St. Suite 1011 Augusta, GA 30901 Web site: http://www.esi911.com/es/products/webeoc.shtml	Contact Info: John O'Dell 800-596-0911 jodell@esi911.com
Key Product Attributes:	
GOTS/COTS: COTS Application Environment: Operational and Exercise Media Scale: Individual, Small and Large Team Product Type: Electronic Simulation, Student Learning Aid, and Instructor Facilitator Aid	Training Type it Supports: Drill, TTX, FSE, Distributed Collaborative Exercise, and National Training Exercise Functional Area(s) it Supports: Commanders, Local, State and Federal Officials Primary Target Audience: EMS, EMA, Fire, Govt. Administrator, Health Care, HazMat, Law Enforcement, Public Safety Communications, Public Health, and Public Works.
Product Description: <p>Web-based information management system providing real-time access to emergency information that can be simultaneously shared among emergency response teams, decision-makers, and supporting organizations during the planning, response, and recovery phases of emergencies. It features automatic update of information displays (e.g., information tracking status reports) as different users (who can be remotely located) input information via status boards. The tool was designed for use with overhead projections, but this is not a requirement. It also contains a simulation template for exercise conduct. The user inputs expected actions at identified times, and the simulation populates status boards to prompt player actions.</p> <p>Observations: Tracking interactions/information-sharing among players; simulation support; enhanced communication; distributed collaborative decision-making environment.</p>	
Version: 5.6 Date evaluated: May 22, 2003	

F. SUMMARY

This report documents the results of the second round of product evaluations and provides a snapshot of the evolving implementation of ThoughtLink's evaluation methodology.

A significant contribution of this project continues to be the collection of T&E requirements from multiple sources. The requirements database has grown from nearly 800 requirements to over 1100. This consolidated set of T&E requirements, which links requirements back to their original source documents, will likely be of value for a range of ODP projects and potential users. Each requirement is coded for various attributes, as are the MS&G products under evaluation, allowing mapping between requirements and products.

In the second round of evaluations, 45 products were evaluated using various criteria, including functionality, T&E attributes, strategy attributes, equipment and personnel needs, cost, etc. The intent of the detailed product reviews is to identify MS&G characteristics that would: (1) suggest whether the product is relevant to ODP T&E; (2) identify specific characteristics that may relate to the product's potential effectiveness in supporting ODP T&E; and (3) identify logistical factors (e.g., cost, maintenance requirements) that may affect decisions regarding the product's use in ODP T&E.

The evaluation results presented here are intended to characterize the products, not to draw conclusions. The final product evaluation report (March 2004) and the final project report (April 2004) will offer recommendations and conclusions and detail a process for selecting and using MS&G products within ODP's T&E strategy.

An important aspect of the product evaluation was to map products to T&E categories. Each category's T&E needs are met by at least one product, and all products but one map to at least one category. This seems to indicate that categories selected are appropriate.

The methodology described here will be used for one more round of evaluations, with results available in March 2004.

This project will culminate with an April 2004 document, in which all three sets of evaluated products will be mapped to categories; certain categories of products will be recommended to ODP as well as factors to be considered when selecting specific products from a given category; and the over-arching ODP T&E system needs (curricula, program of instruction, etc.) will be discussed.

APPENDIX A: SOURCE DOCUMENTS FOR REQUIREMENTS

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Requirements were extracted and imported to our database from the following set of documents.

- Arlington County After Action Report of the response to September 11. Available on-line: <http://www.co.arlington.va.us/fire/edu/about/docs/aar.htm>
- Assessment of Federal Terrorism Preparedness Training for State and Local Audiences (FEMA)
- Bioterrorism & Emergency Readiness: Competencies for all Public Health Workers. Columbia University School of Nursing, Center for Health Policy. Available on-line: <http://cpmcnet.columbia.edu/dept/nursing/institute-centers/chphsr/btcomps.pdf>
- Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response (1999) (ISBN 0309061954), Committee on R&D Needs for Improving Civilian Medical Response to Chemical and Biological Terrorism Incidents, Institute of Medicine. Available on-line: <http://www.nap.edu/catalog/6364.html>
- Core Public Health Worker Competencies for Emergency Preparedness and Response. Center for Health Policy Local Public Health Competency for Emergency Response. Columbia University School of Nursing, April 2001. Available on-line: <http://www.mailman.hs.columbia.edu/CPHP/cdc/COMPETENCIES.pdf>
- Department of Justice Exercise Evaluation Program (JEEP, Draft, August 2002)
- Emergency Responder Guidelines (ODP)
- Exercise objectives contained in the materials developed by the ODP exercise contractors.
- Federal Emergency Management Agency Federal Response Plan (February 7, 1997). Available on-line: http://www.fas.org/irp/offdocs/pdd39_frp.htm
- Homeland Security Presidential Directive/HSPD-5. Available on-line: <http://www.whitehouse.gov/news/releases/2003/02/20030228-9.html>

- Internal TLI memorandum. Notes on New Jersey Gateway Response Exercise, Port Newark, Newark, NJ, December 12, 2002.
- Internal TLI memorandum. Notes on Terrorism Preparedness and Response: Enhancing the Capability of First Responders conference in New Orleans, LA, June 02-04, 2003.
- Internal TLI memorandum dated January 8, 2003. Notes on Operation Critical Response exercise – City of Burbank, November 14, 2002.
- National Response Plan (Initial Plan, Draft). Available on-line: http://www.nemaweb.org/docs/National_Response_Plan.pdf
- NLD exercises observed by TLI: Chattanooga CWTTX, Glendale CWFSE, Grand Rapids CWFSE, Las Vegas CWFSE, Orlando BWTTX & CWTTX, St. Petersburg BWTTX, Tacoma BWTTX, Warren CWTTX
- ODP Exercise Program Review: Opportunities for Models, Simulations and Games (Agrait, Evans, Grossman, Hammell, Loughran, & Stahl, 2003a).
- Presidential Decision Directive 39. Available on-line: <http://kyem.dma.state.ky.us/training/trainingdocs/WMD%20ExDev/Presidential%20Decision%20Directive%2039.doc>
- Prevention Tasks (Pelfrey, Draft March 2003)
- Top Officials 2 Exercise Objectives & Goals (ODP)
- Training Strategy for ODP with Implications for WMD Training (Pelfrey, Kelly, & May, May 2001).

APPENDIX B: ATTRIBUTES USED IN PRODUCT EVALUATIONS

APPENDIX B: ATTRIBUTES USED IN PRODUCT EVALUATIONS

In this round of product evaluations, products were rated on the extent to which they met certain attributes described in the following table. For a given product, possible values assigned to each attribute were:

0 = No or N/A

1 = Yes

2 = Possible/Maybe.

Please note that as the requirements database is refined and additional products are evaluated, some attributes may evolve (e.g., they may no longer be used; additional attribute levels may be included, etc).

Attribute	Definition
After Action Review (AAR) Capability	
Scenario Replay: playback of events possible	The product records and can play back events.
Capable of providing automated data summary	The product automatically summarizes data and allows the user to review and analyze it.
Designed to have SME produce AAR	The AAR is not automated but rather consists of a discussion following events or is created later by SME.
No feedback or AAR available	The product does not have any AAR capability.
Applied Context	
Non-Specific	The product does not require the participant to use specific equipment during T&E.
Equipment	The product requires the participant to use specific equipment during T&E.
Application Environment	
Analysis	Can be used as a stand-alone product to evaluate a specific issue. The results may also be used to support training, operations, or exercises.
Entertainment	Developed and marketed to provide enjoyment - primary purpose was not intended to be training or exercising.
Exercise	"Tool for practicing and evaluating how prepared for and how well an organization responds to a potential terrorist incident". ¹
Training	Systematic acquisition of knowledge, skills, rules, concepts, or attitudes that result in improved performance.
Operational	Can be used in a real-world response.
Content	
Knowledge	Recognizing or recalling ideas, material, or phenomena; learning knowledge alone that can be achieved in any learning setting (e.g., classroom).

¹ HSEEP, Vol. IV: Exercise Evaluation and Implementation [Draft] 2/04/03, p. 4.

Applied	Given a new problem, ability to employ correct abstractions and procedures. Involves the application of skills, as well as knowledge (hence, applied content).
Hands-On	Requires specific practical activities (can be simulated).
Descriptive Product Categories	
Electronic Simulation	Any product that uses electronic simulation or stimulation as a significant component. Typically these products would simulate information associated with student or participant performance of operationally oriented tasks. Importantly, these products would specifically address team and/or individual T&E.
Non-Electronic Simulation	The product is a simulation, but it is not implemented electronically. For example, a 3-D model of a city used for training and exercise.
Computer Based Training (CBT) other than simulation	Computer-based software and/or hardware that does not include simulation as a component. These products must interface directly with participants and not require constant attention by an instructor.
Game	Product whose primary purpose is competition in pursuit of a specific goal, constrained by a set of rules.
Instructor/Facilitator Aid	Products whose primary purpose is to assist the instructor/facilitator by providing information, accepting inputs, and performing other instructor/facilitator support functions during T&E.
Student Learning Aid	Product that interfaces directly with participants, providing information and/or requiring inputs.

Supporting Technology Product	<p>A product that achieves T&E objectives through another primary learning medium, with the following:</p> <p><i>Required Characteristics:</i></p> <ul style="list-style-type: none"> -- Provides generic functionality (i.e., the design intent of the product is not tightly coupled with a specific end-user application). -- Capable of supporting multiple end-user applications and/or application integration, typically through standardized interfaces. <p><i>Optional Characteristics:</i></p> <ul style="list-style-type: none"> -- May simulate events other than training or exercise activities, such as airborne dispersion modeling. -- May not necessarily have learner related intent or design features (e.g., graphical user interface, training content). <p><i>Examples:</i></p> <p>HTML browser applications (Explorer, Navigator etc.). Networking, data transmission, and communications products. Some plume models, exercise stimulators. Data management intermediaries for storage, cataloging, querying, and retrieval.</p>
Developer/Owner	
COTS	Commercial off-the-shelf.
GOTS	Government-off-the-shelf.
Ease of Use	
Easy	The product is easy to use. It requires minimal computer knowledge and provides simple navigation and embedded assistance (e.g., drop menus, drag and drop features).
Relatively Easy	The product is relatively easy to use. It requires basic computer knowledge but does not provide as much embedded assistance as above.
Difficult	The product is difficult to use. It requires substantial computer knowledge or trained support staff.
Environment	
Generic	Knowledge, skills, and abilities are trained in a nonspecific environment (e.g. hypothetical city).

Locale-specific	Knowledge, skills, and abilities are trained in a specific environment (e.g., Washington D.C.), simulated or otherwise.
Face Validity	
High	Mostly reflects the job(s).
Medium	Parts of it reflect the job(s).
Low	Mostly differs from job(s).
Functional Area Supported²	
Emergency Medical Services (EMS)	Individuals who serve as EMT and paramedics (either ground or air based) and provide pre-hospital emergency care.
Emergency Management Administration (EMA)	Organizations, both local and state, which are directed to coordinate preparation, recognition, response, and recovery for emergency incidents including WMD.
Fire	Individuals that provide life safety services including fire suppression, rescue, arson investigation, public education, and prevention.
Government Administration (GA)	Elected and appointed officials responsible for public administration of community health and welfare during an incident.
Healthcare (HC)	Clinical, forensic, and administrative personnel in hospitals, physician offices, clinics and other facilities, responsible for providing medical care to include surveillance (passive and active), diagnosis, laboratory evaluation treatment, mental health support, and epidemiology investigation, evidence collection, along with fatality management for humans and animals. ³
HazMat	Individuals, who identify, characterize, provide risk assessment, and mitigate/control the release of a hazardous substance or potentially hazardous substance.
Law Enforcement (LE)	Individuals with responsibility as sworn law enforcement officers.
Private Sector	Representative from privately owned resources affected by an incident or potentially affected by an incident (i.e., power company).

² From Pelfrey, Kelly, and May, 2001. Unless otherwise cited.

³ From Glossary Definitions Associated with Prevention Tasks, ODP August 2003.

Public Health (PH)	"Personnel whose responsibility includes preventing epidemics and the spread of disease, protecting against environmental hazards, preventing injuries, promoting and encouraging healthy behaviors, responding to disasters and assisting communities in recovery, and assuring the quality and accessibility of health services." ⁴
Public Safety Communications (PSC)	Individuals who link persons reporting an incident to response personnel and emergency management.

Public Works (PW)	Organizations and individuals who control and maintain community infrastructure.
Transportation	Organizations and individuals whose responsibility is ensuring and providing the trouble-free use of the transportation system.
High Level Architecture (HLA)	
HLA compliant	The product has been demonstrated to successfully link to another system using the High Level Architecture (IEEE 1516) standard, or has been certified to be compliant.
Interconnectivity	
Standalone	No network connectivity is supported.
LAN	Connectivity is supported by a Local Area Network or intranet.
WAN	Connectivity is supported by a Wide Area Network, distinct from the Internet (typically requiring secure/encrypted links).
Internet	Connectivity is supported by the public Internet.
Mode of delivery	
Self-paced	Product allows user to proceed at own pace.
Instructor/facilitator	Product requires an instructor or facilitator to help guide user.

⁴ The Public Health Workforce: An Agenda for the 21st Century. A Report of the Public Health Functions.

Potential Responder Training Levels	
Awareness	Individuals who are likely to witness, discover, or respond to a WMD incident and who have been trained to initiate an emergency response sequence. They would take no further action beyond notifying the authorities of the release.
Performance (Operations)	Individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site of a WMD incident for the purpose of protecting nearby persons, property, or the environment from the effects of the incident. Their function is to contain the incident from a safe distance, keep effects from spreading, and prevent exposure.

Technician (Specialist)	Individuals who respond to WMD incidents and potential WMD incidents for the purpose of stopping the incident or treating casualties. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to prevent or mitigate the release of a hazardous substance or treat affected personnel.
Planning & Management (includes ICS)	Incident commanders who will assume control of the WMD incident scene beyond the first responder awareness level and have emergency response plan training equal to the first responder operations level as well as emergency response plan competency.
Integrated Systems	Multi-jurisdictional; beyond IC level.
Product Re-playability	
Multiple	Dynamic paths through the product and more than one outcome possible.
Static configuration	Fixed path, only one right way to use the product.
Student Level	
Basic	Personnel who have recently become involved with WMD planning or response activities. T&E directed at these students involves generic skills and knowledge related to WMD.

Intermediate	<p>Personnel with more WMD experience than a job newcomer, and the ability to effectively perform additional response tasks.</p> <p>T&E directed at these students involves knowledge of the basic hazard and risk assessment techniques and proficiency in performing the assessments.</p>
Advanced	<p>Personnel with considerable experience with WMD incident response or planning; high-level decision-maker, operations supervisor, or technical expert.</p> <p>T&E directed at these students involves high level planning, decision-making, management and leadership.</p>
Student Unit (Media Scale)	
Group	Participants receive the same instruction (e.g., classroom, CBT lab). There is no interdependence, nor are unique roles necessary.
Individual	Each participant receives training individually.
Small team	Less than 25 participants who have unique roles and must interact in order to successfully complete the training.
Large team	More than 25 participants who have unique roles and must interact in order to successfully complete the training.
Multi-Agency Participation	Participants from two or more agencies participate in T&E together.
Target Audience	
First Responders	Personnel involved in response activities in the field.
Commanders	Personnel leading the response making decisions and coordinating efforts.
Local Officials	Personnel elected or otherwise with access to resources and authority in a municipality.
State Officials	Personnel elected or otherwise with state level access to resources and authority.
Federal Officials	Personnel elected or otherwise with access to Federal resources and authority.

TLI Recommendations/Observations	
Specific objectives, criteria, metrics	The product allows users to create specific objectives and criteria that are measurable and can be used to determine whether or not the objective was met.
Audit and evaluate plans and procedures prior to an exercise (plan development)	The product allows scenarios to be played out to determine gaps in plans and procedures.
Dissemination of best practices (expansion of learning benefits)	The product allows others to see results so that they may learn or exercise similarly, and/or the product guides the user towards a "best" course of action.
Tracking participant performance through multiple tries	Participant performance is tracked frequently with a score and typically with pre- and post-test capabilities.
Structured feedback among players	The product allows participants to be aware of others' actions during or after the exercise.
Increased decision-making	The product requires decision-making for users to progress.
Tracking interactions and information sharing among players	The product provides the capability to visually depict information from different participants' perspectives, and/or the product allows for tracking of others' actions during or after the T&E.
Simulation support	The product provides help for adjudication of decisions.
Remote observation	The product allows for players or non-players in different sites to observe actions.
Enhanced T & E communication	Communications are an essential part of this product. Participants must communicate in order for the exercise to progress; allowing for improved communications with use.
Hospital T & E	The product provides T&E with a hospital focus.
Distributed collaborative decision-making environment	The product provides a distributed collaborative decision-making environment; participants can be remotely linked.
Measure of learning/retention/ Transfer of Learning	The product measures user performance improvement: use tool at later time and compare results (e.g., pre-test and post-test capabilities).

Type of Learning Supported	
Initial Acquisition	Participants acquire knowledge and skills for the first time.
Improvement	Participants continue to develop previously acquired knowledge and skills.
Maintenance/Refresher	Participants practice and refresh previously acquired knowledge and skills, but no additional learning occurs.
Type of Training/Exercise	
Part-task	T&E that breaks down a complex set of skills into smaller elements each taught separately. Skills can be combined later.
Drill	A coordinated, supervised activity normally used to test a single specific operation or function within an organization. Drills are commonly utilized to provide training with new equipment, to develop new policies and procedures, or to practice and maintain current skills.
Table Top Exercise (TTX)	Simulates an emergency in an informal, stress-free, conference-room-type setting. They usually involve senior staff, elected or appointed officials, or other key staff. In a tabletop, objectives are aimed at facilitating understanding of a concept, identification of opportunities or problems, and/or achieving a change in attitude.
Functional Exercise (FE)	Also known as a Command Post (CP) exercise, this type of exercise is driven by a Master Scenario Events List (MSEL) to motivate realistic actions, and includes very little or no field activities. Only key personnel participate. Such an exercise usually takes place in an operations center, field environment, or a combination of the two.
Full Scale Exercise (FSE)	Exercise designed to evaluate the operational capability of response systems in a highly stressful environment that simulates actual response conditions. Resources are required to mobilize and deploy to a simulated site or locale, generally over an extended time frame.
Full Scale Reinforcement	Strengthening knowledge and skills applied during an FSE.
Equipment Training	Training to use specific equipment related to WMD response.

Awareness	Training designed to teach or practice fundamental skills and knowledge.
Pre-Training	Acquisition of knowledge and skills necessary for exercise/training conduct.
National Training Exercise	A training exercise that involves national components, strengthening nationwide response capability.
Distributed Collaborative Exercise	Training or exercises in which participants interact with each other while geographically dispersed.
Type of WMD Event Supported	
Chemical	Chemical agents used.
Biological	Biological agents used.
Radiological	Involves release of radiation but was not caused by a nuclear explosion.
Nuclear	Nuclear device used with release of large quantities of radiation.
Explosive	Explosives used.

APPENDIX C: PRODUCT REVIEW TEMPLATE

APPENDIX C: PRODUCT REVIEW TEMPLATE

SURVEY FORM COMMERCIAL & GOVERNMENT MODELS, GAMES & SIMULATIONS

A. Basic Product Information

Name of Product:

Developer:

Contact information:

Technical Support Contact Information:

Web site:

COTS/GOTS:

Product status (version in use):

Source(s) of Evaluation: *check all that apply*

<input type="checkbox"/>	Observed product in use during a training or exercise
<input type="checkbox"/>	Observed demo
<input type="checkbox"/>	Played/used product
<input type="checkbox"/>	Attended briefing
<input type="checkbox"/>	Reviewed CD-ROM or other software
<input type="checkbox"/>	Reviewed Web site
<input type="checkbox"/>	Spoke/emailed with POC
<input type="checkbox"/>	Interview(s) with product users (please paste into the end of this document)
<input type="checkbox"/>	Product developer filled in evaluation form
<input type="checkbox"/>	TLI team modified evaluation form

Materials in our Possession:

<input type="checkbox"/>	Brochure/prospectus
<input type="checkbox"/>	CD-ROM
<input type="checkbox"/>	Related papers
<input type="checkbox"/>	Material from Internet
<input type="checkbox"/>	Other: please state

B. Summary Product Description: please provide a quick introductory summary identifying what the product is and describing key elements.
Include the following:

- Focus/specialty of product (incident response operational tool/system, incident response training/exercise tool/system, other):
- Current target audience:

C. Objective Category Product Attributes:

1. What is the product? (Descriptive Product Categories)

	Electronic simulation
	Non-electronic simulation
	Computer-based training other than simulation
	Game
	Instructor/facilitator aid: student interfacing
	Instructor/facilitator aid: instructor/facilitator assistance

(See appendix for classification)

2. Product Capabilities:

	Developer/Owner		Environment
	GOTS		Generic
	COTS		Locale specific
	Media Scale		Product Re-Playability
	Individual		Multiple dynamic paths through the product and more than one outcome possible
	Group		Static configuration: fixed path, only one right way to use the product
	Small multi-user team (up to 25 persons)		
	Large multi-user team (more than 25 persons)		AAR Capability
			Scenario replay
	Applied Context		Automated summary of data
	Non-specific		SME controls AAR
	Equipment		Does not provide feedback or AAR
			HLA Compliance (does product support HLA?)

(0 = Not Currently Supported, 1 = Currently Supported, 2 = Possibly Supported, 3 = Not Applicable)

3. Technical Attributes

- a) Identify major product components and their operation ... hardware, software, simulation and functional (e.g., multi-player collaboration, gaming, 3-D interactive model, 2-D topography, video, plume model, questions and answers, HELP):
- b) Standalone product, or requires other hardware and software to function (e.g., external simulation models, data base, operational equipment):
- c) Large multi-station system, or based on individual PCs?
- d) If simulation models are used, what is the basis of the data and/or distributions used?
- e) Web-based application, LAN, or a single computer/system-based application?
- f) Describe any debriefing after-action reporting support tools:
- g) Other facilities required (Home/office; building, multiple rooms, auditorium; LAN; etc.)?

4. Personal Computer Requirements *(if appropriate; most software will offer minimum and recommended configurations).*

- a) Software Operating System (*Windows XP, 2000, etc.; MAC OS; UNIX; other*):
- b) Processor speed (in MHz):
- c) Memory (SDR/DDR):
- d) Free disk space:
- e) Internet connection speed (if any):
- f) Display adapter:

- g) CD-ROM speed:
- h) Optional accessory requirements⁵:

5. Describe the user interface characteristics:

6. If multiple users:

- a) Identify the range of persons it can simultaneously support (min-max)?
- b) Number of persons usually trained simultaneously?
- c) Custom/proprietary hardware required? If so, identify:

7. Describe any user HELP features:

8. Data recording & storage features (e.g., Scenario events; student performance, student tracking):

D. Training characteristics

1. Describe any initial training provided? (Set-up, familiarize user with product):

2. Attributes

	Application Environment:		Content
	Training		Knowledge
	Exercise		Applied
	Operational		Hands-On
	Analysis		
	Entertainment		Target Audience
			First Responders
	Mode of Delivery:		Commanders
	Self-paced		Local Officials
	Instructor/Facilitator		State Officials
			Federal Officials
	Student Level – Relevant Domain		
	Basic		Potential Training Levels:
	Intermediate		Awareness
	Advanced		Performance (operations)
			Technician (specialist)
	WMD Event Supported:		Planning and Mgmt. (incl. ICS)
	Chemical		Integrated systems (multi-jurisdictional, beyond ICS)
	Biological		
	Radiological		Training Type Supported
	Nuclear		Equipment Training
	Explosion		Awareness
			Part Task Training
	Functional Area Supported:		Pre-Training
	EMS		Drills
	EMA		TTX
	Fire		FE
	Govt. Administrator		FSE
	Health Care		FSE Reinforcement
	HazMat		Distributed Collaborative Exercise
	Law Enforcement		National Training Exercise
	Public Health		
	Public Safety Communication		Incident Stage Supported
	Public Works		Prevention
			Detection and Identification
	Learning Supported:		Response
	Initial Acquisition		Recovery
	Improvement		
	Maintenance/Refresher		

(0 = Not Currently Supported, 1 = Currently Supported, 2 = Possibly Supported, 3 = Not Applicable)

3. Product Content

a) Training content description (if applicable):

- b) Information/knowledge base contained in product (Briefly identify any relevant WMD-specific content [e.g., Chemical agent summaries]):
- c) Exercise characteristics (Long, short; tutorial; self-paced; normal operation, failures; simulation-supported; scripted/instructor-controlled):
- d) Exercise/scenario length/time (typical):
- e) Potential equipment and/or facilities product can address:
- f) Is product directly applicable to counter-terrorism training/exercises or are modifications required? If modifications are required briefly describe them.
- g) Are there any constraints on supported exercises or scenarios?

4. Instructional Attributes (if applicable)

- a) Potential instructional-strategies/delivery-methods (identify potential examples at high-level ... e.g., classroom, real-time exercise, self-paced individual CBT, video scenario, Q&A, positive guidance, case study, web-based collaborative, real-time VTC):
- b) Scenario/exercise run/conduct features (e.g., positive guidance, student cues, scripted scenario, and automatic reactive scenario):
- c) How is training managed (e.g., testing, certification of completion, etc.)?
- d) Does a curriculum already exist? If so, briefly describe its form and content:
- e) Student/participant/team evaluation features; identify each (e.g., scenario/exercise data recording; performance measures; performance standards):
- f) Student/participant/team feedback features (immediate and AAR); identify each (e.g., Text/graphic information displays, animation; audio; situation cues; immediate/delayed; etc.):

5. Instructor/controller/evaluator tools

- a) Scenario/exercise design & development (e.g., instructor handbook; scenario conditions and events scripting; fast-time models; scenario library; MSEL support):

- b) Scenario/exercise conduct (e.g., student-action/situation warning/cues; scenario/exercise conduct controls; real-time/fast-time/time-jump; data recording and real-time analysis and display; displays and controls to support immediate feedback to participants):

6. Customization

- a) Can the product be customized? If so, how, and by whom?
- b) What is the process and how much time does it take to develop or modify a new exercise/scenario?
- c) Does the customer or the vendor modify or develop a new exercise/scenario?
- d) What is the process and how much time does it take to setup an exercise/scenario to run?

7. Analysis features (e.g., Post-exercise/scenario analysis tools; real-time analysis tools):

E. TLI Evaluation

	Face Validity		Current Applicability to ODP
	High		Very
	Medium		Somewhat
	Low		Limited
	N/A		
	Ease of Use		
	Easy		
	Relatively Easy		
	Difficult		
	Requires trained support staff		

F. TLI Observations & Recommendations:

Selected General Observations: product allows for/can be used for:	
	Specific objectives, criteria, metrics/measure or level of preparedness
	Audit and evaluate plans and procedures prior to an exercise/Plan development
	Dissemination of best practices/expansion of learning benefits i.e. report generation
	Tracking participant performance through multiple tries (automation)
Selected TTX Observations: product allows for/can be used for:	
	Decision-making
	Tracking Interactions/info-sharing among players

Selected Functional Observations: product allows for/can be used for:	
	Simulation support
Selected FSE Observations: product allows for/can be used for:	
	Remote observation
	Enhanced communication T&E/does it practice/train/exercise communications?
	Hospital T&E
Selected New Concepts for Improving T&E: product allows for/can be used for:	
	Distributed, collaborative, decision-making environment
	Measure of learning/retention & transfer of learning (implies pre-test and post-test)

G. Cost

The following set of questions can be used to collect MS&G product cost information that allows for ease of database coding. The question order is intended to assist in cost classification.

1. Can the vendor provide a price for a given (or typical) product or system? (choose one)
 - a. Yes (*proceed to Q2*)
 - b. No, vendor must quote a system based on user requirements (*end here*)
2. Does the cost apply to: (choose one)
 - a. Product
 - b. Service
 - c. Product and Service Bundle
3. Product (content) configuration, as priced, is: (choose one)
 - a. Standardized
 - b. Vendor customized
 - c. Allows user customization
4. What are the prices (in \$USD) according to type: (fill in all applicable)

Please make notations about price unit bases below the table (e.g., \$/hour service), as appropriate.

	PRICE			
	Actual	Typical	Min. Likely	Max. Likely
Product purchase				
Module purchase				
Product License (unspecified)				
Product license (site)				
Product license (base system)				
Product license (terminal)				
Product license (user)				
Module license (unspecified)				
Module license (site)				

Module license (base system)				
Module license (terminal)				
Module license (user)				
Product upgrade option				
Warranty upgrade option (base system)				
Warranty upgrade (terminal)				
Auxiliary product purchase				
Auxiliary product license				
Service usage				
Vendor quoted service				
System training/support/maintenance				
Daily rate and/or travel				
Instructor fee				
Trainee fee				

APPENDIX D: SELECTED PRODUCT ATTRIBUTE RATINGS

	<i>Developer/ Owner</i>		<i>Application Environment</i>					<i>Mode of Delivery</i>		<i>Supported Learning Types</i>		
Product	GOTS	COTS	Training	Exercise	Operation	Analysis	Entertain	Self- paced	Instruct./ Facil.	Acquire	Improve	Maintain
ADFR		1	2	1	1	1		1	2			
ADPR	2	1	1	1	1	1		1		1	1	1
AEAS	1		1	1		1		1	1		1	1
BWRT	1					1			1		1	
BSMR		1	1	1				1			1	1
CRTS		1	2	1				1			1	1
CJJC	1	1	1	1	1	1		1	1		1	1
ETM		1		2	1			1			2	
EGLD		1	1	2	2	2		1	1	1	1	1
ERSM	1		1	2	1	1		1	1		1	
NSN		1	1	1					1	2	1	1
FS2		1	1	1					1		1	1
FRST		1		1	1	1			1		1	1
GEC	1	1	1					1	2	2	1	1
GRV		1	2	2	1			2	2		1	
GF	1						1	1				
HPAC	1		1	1	1	1		1	2	1	1	1
HYP	2	1	2	2	2	1			2	2	2	2
JANS	1		1	1		1			1	1	1	1
JCAT	1		1	1		2			1	2	1	1
JTLS	1	1	1	1	1	2		2	1	2	1	1
LLV		1	1					1	1	1		1
MMTE		1	2	1					1		1	1
MIDA		1	1	1	1	1		1	1	1	2	2
MINV		1		1		1			1		1	1
OPSC		1		2	1			1			2	

	<i>Developer/ Owner</i>		<i>Application Environment</i>					<i>Mode of Delivery</i>		<i>Supported Learning Types</i>		
Product	GOTS	COTS	Training	Exercise	Operation	Analysis	Entertain	Self- paced	Instruct./ Facil.	Acquire	Improve	Maintain
PEGM	1		1	1	1	1		1	1	1	1	
QUIC	1	2	2	2	1	1		1	2		2	2
RAMS	2	1	2	2	2	1			2	2	2	2
RIFS		1		1	1	1			1		1	1
RAM		1	2	1	1	1			1		1	1
S3		1	1	1					1	1	1	1
SLRY	1	2	1	1		1		1	1	1	1	1
SEAS		1	2	1	1	1		2	1	2	1	1
SVZS		1	1	1		1		1	1	1	1	1
SVZT		1	1	1		1		1	1	1	1	1
SVZC		1	1	1		1		1	1	1	1	1
SOFR		1			1	1			2			
SPCM	1		1	1	2				1	1	1	1
STC		1	1	1				1		1	1	1
TTR		1	1	1		1			1			1
VCIT	1	1	1	1	2	1		1	1	1	1	1
WDAC	1	2	2	2		1			1		1	
WEOC		1		1	1			1			1	
Currently Apply	16 36%	32 73%	25 57%	30 68%	18 41%	26 59%	1 2%	24 55%	28 64%	15 34%	33 75%	29 66%
Potentially Apply	3 7%	3 7%	10 23%	9 20%	5 11%	3 7%	0 0%	3 7%	8 18%	7 16%	6 14%	4 9%
Do Not Apply	25 57%	9 20%	9 20%	5 11%	21 48%	15 34%	43 98%	17 39%	8 18%	22 50%	5 11%	11 25%

	<i>Potential Responder Training Levels</i>					<i>Product Playability</i>		<i>AAR Capability</i>			
Product	Aware	Perform. (Ops.)	Technician (Specialist)	Planning & Mgt.	Integrated Systems	Dynamic / Stochastic	Static / Deterministic	Event Playback	Auto Summary	AAR by SME	No feedback nor AAR
ADFR	1					1	1		1		
ADPR	1	1	1	1	1	1	1	2	1	1	
AEAS		1	1	1	1	1			1		
BWRT				1	1	1					
BSMR		1	1			1			1	1	
CRTS		2	2	1	1	1		1	1	1	
CJJC	2	2		1	1	1		1	1	2	
ETM				1	1				1	1	1
EGLD				1	1	1		1	1	1	
ERSM	2	2		1	1						1
NSN	2			2	1	1				1	1
FS2		1	1	1		1		1			1
FRST		1	1	1	1	1		1			
GEC				1	2		1		1		
GRV				2	2				2		
GF							1		1		
HPAC	2	2	2	1	1	1		1	1		1
HYP	2	2	2	2	2	1	1	2	2		1
JANS	1	1	2	1	1	1	1	1	1	1	1
JCAT		1		1	1	1		1		1	
JTLS	2	2		1	1	1		1	1	1	
LLV	1										
MMTE		1	1	1	1					1	
MIDA	1	1	1	1	2	2	2	1	1	2	
MINV		1	1	1		1		1		1	

	<i>Potential Responder Training Levels</i>					<i>Product Playability</i>		<i>AAR Capability</i>			
Product	Aware	Perform. (Ops.)	Technician (Specialist)	Planning & Mgt.	Integrated Systems	Dynamic / Stochastic	Static / Deterministic	Event Playback	Auto Summary	AAR by SME	No feedback nor AAR
OPSC				1	1				1	1	
PEGM		1	1	1	1	1		1	1	1	
QUIC	2	2	2	1	2	1		1	1	2	2
RAMS	2	2	2	2	2	1	1	2	2		1
RIFS		1	1	1	1	1					
RAM		1	1	1	1	1			1	1	
S3		1	1	1	1	1		1	1		
SLRY				1	1	1			1	2	
SEAS			1	1	1	1	2	1	1	1	
SVZS	1	2	2	1			1	1	1	2	
SVZT	1	2	2	1			1	1	1	2	
SVZC	1	2	2	1		2	1	1	1	2	
SOFR									1		
SPCM				1	1	1				1	
STC		1	1			1			1	1	
TTR				1	1	1		1	1	1	
VCIT	1	1	1	1	2	1		1		1	
WDAC	2			1	2	1		1	1	1	
WEOC				1	1	1			1	1	
Currently Apply	9 20%	16 36%	15 34%	34 77%	25 57%	31 70%	10 23%	21 48%	29 66%	21 48%	8 18%
Potentially Apply	9 20%	11 25%	9 20%	4 9%	8 18%	2 5%	2 5%	3 7%	3 7%	7 16%	1 2%
Do Not Apply	26 59%	17 39%	20 45%	6 14%	11 25%	11 25%	32 73%	20 45%	12 27%	16 36%	35 80%

GLOSSARY

GLOSSARY

Term	Definition
Alternative values	The different levels of an instructional strategy attribute, relevant to T&E requirements, and media evaluation. For example, the alternative values for the Student Unit attribute are individual, group, and team.
Asynchronous	Collaborations occur over an elapsed period of time and do not require users to be present in the virtual environment at the same time.
Attributes	Characteristics of the instructional strategy, including qualities and quantities.
Audit plans/procedures	A methodical examination and review of plans, processes, and procedures.
Behavioral item	See Responder behavioral item.
Best practices	Those strategies, activities, or approaches that have been shown to be effective for training or exercising response to WMD. At this time, best practices are based on qualitative data.
Decision support tool	A software program incorporating structured decision-making processes to ensure that important decisions are made on time and are based on facts, research, and analysis.
Delivery mechanisms	Mechanisms and techniques by which training is delivered, including media, products, and simulations.
Discipline	Organizations and personnel actively engaged in preventing, detecting, and responding to a potential WMD incident by professional background such as law enforcement, fire, emergency management, and emergency medical personnel.
Distributed collaborative environment	Software that enables multiple users to electronically interact with each other from different geographical locations, either in real time (synchronously) or at different times (asynchronously). Interactions can vary from real-time video teleconferencing to email to file sharing.
Evaluation	A systematic method for gathering information about the impact and effectiveness of an intervention where results are used to improve the intervention, determine whether the learning objectives have been achieved, and assess its value to the organization.
Exercise scenario	The synopsis of a possible series of events used during an exercise to make it more realistic.
Facilitator	The moderator of an exercise or training.
Full scale exercise	An exercise employing a city's actual response elements: equipment, personnel, and other resources are mobilized. EOCs and command posts are activated, first responders attend to people simulating the effects of a chemical weapons attack, decontamination and hazardous materials procedures unfold, and often area hospitals are included in the response.

Functional exercise	An exercise that simulates the reality of operations in a functional area by presenting complex and realistic problems in a highly stressful environment, requiring participants to quickly generate rapid and effective responses. Designed to test and evaluate capabilities such as plans, policies, and procedures.
Game	A competitive environment where individuals or teams of individuals play against each other or against a computer in pursuit of a goal following a set of rules. Games generally have winners and losers and good games offer clear objectives about what it takes to win.
Geo-plot	A geographic-situation display, presented in graphical form, containing representations of terrain, roads, waterways, and other geographical features. A bird's-eye view of a geographical area is an example.
Heuristics	Exploratory problem-solving techniques that utilize self-educating techniques (as the evaluation of feedback) to improve performance.
Immersive simulation	The student or user is given the impression of actually being in the simulation.
Immersive training	Training that plunges the student into learning something by doing it either in a real situation or a simulated situation.
Input characteristics	Student/participant entry skills and knowledge.
Instructional strategy	The particular set of training methods used to achieve the desired training outcome and achieve the training objectives. Same as training strategy.
Instructional strategy class	A macro-level strategy for achieving training/exercising objectives; how to train/exercise.
Knowledge management	The process of capturing, organizing, and storing information and experiences of workers and groups within an organization and making it available to others.
Mapping	Linking of a product to a training and exercise category via common training/exercise strategies.
Macro-level	High-level description or content, as opposed to a more detailed specification description.
Media	A generic term for devices used to train and exercise including simulations, computer-based training courses, games, books, tutorials, video conferencing, Web-based instruction, and MS&G.
Media characteristics	The features of training and exercising media, such as simulation characteristics, media format and context, visual information presentation characteristics, instructor/facilitator aids/tools, audio characteristics, data recording, feedback formats, freeze and fast-forward, instructional branching, advantages and limitations, and other features. Characteristics may also pertain to features such as cost, support staff, etc.
Model	A representation of a real-world effect (e.g., a plume model may show the direction and dispersion of a chemical plume taking into account wind direction and speed); a logical description of how a system performs.

Needs	Something that is needed for a system to function as desired. A training need, for example, would be training system elements, such as curricula or media, that are needed to bridge the gap between the current level of individual/team performance and goal-level of performance.
On-demand training	Training that is available at any time.
Part-task training	Training each part of a complex set of tasks separately rather than training the integrated set of tasks simultaneously.
Pre-training	Training or learning that occurs prior to a training course and allows the student to prepare for subsequent training.
Primary training audience	That part of the training or exercise audience at whom the exercise objectives are focused. They receive the majority of the benefit of training or exercise.
Rating criteria	Standard against which judgments on the applicability, presence, and/or absence of an attribute were made to ensure standard evaluation ratings of products.
Reinforcement training	Training that follows another training or exercise and serves to reinforce the acquired learning.
Requirements	Training and exercise system characteristics necessary to meet ODP's preparedness needs in the area of WMD.
Requirements analysis process	Detailed steps of the analysis to be performed under the requirements analysis structure.
Requirements analysis structure	Overall approach to determining the requirements.
Requirements management	Process of identifying, organizing, documenting, and tracking the changing requirements of a project.
Requirement view	Within RRP, a database window displaying selected requirements based on a specific query.
Resources	Resources associated with training/exercising, including development and conduct. Resources may include training materials, equipment, staff, facilities, time, and other factors.
Responder and decision-maker data sources	The data sources, including documents and other sources, from which the responder and decision-maker behavioral items were obtained, and placed into the set of requirement categories.
Responder behavioral items	The collection of learning objectives, performance objectives, skills, knowledge, and other behavior-related statements indicative of responder and decision-maker training and exercising requirements.
Scheduled training	Training that has been scheduled to occur at a particular time and place.
Secondary training audience	This part of the training audience participates in a training session or exercise, often to provide realism for the primary training audience. Any benefits the secondary training audience receives are serendipitous.

Simulations	The implementation of a model, or set of models, to represent the real world. Simulations test hypotheses and help gain insights into a problem or situation. Simulations are often repeatable to estimate likely outcomes.
Structured feedback	A formal procedure for giving and receiving feedback.
Synchronous	Collaboration that occurs in real time. In a virtual environment, users interact and collaborate in real time.
Synthetic environments	Computer or virtual environments such as models, simulations, or games.
T&E package	Within RRP, a folder organizing requirements and requirement views into related groups.
Tabletop exercise	A facilitated discussion of various issues surrounding response to a hypothetical WMD event. Tabletops typically occur in a classroom setting and involve representatives from emergency response organizations in the local community (fire, police, ambulance service, hospitals, etc.), elected or appointed officials, senior staff of various agencies, and state and federal officials.
Training and exercising requirement categories	The set of categories that contain all of the responder behavioral items, which were extracted from multiple data sources. Each category, which contains a number of behavioral items requiring similar instructional strategies, is defined in terms of major instructional strategy attributes.
Traceability	Illustration of the relationships between requirements of the same or different types.
Training materials	Training materials are often considered a type of training media such as books, data sheets, and information handouts. Materials do not include simulations or computer based training.
Training method	The methods used to conduct training and exercises. Also referred to as training technique.
Training procedures	Procedures associated with implementing training methods.
Training strategy	The particular set of training methods used to achieve the desired training outcome and achieve the training objectives. Same as instructional strategy.
Training technique	The methods used to conduct training and exercises. Also referred to as Training Method.
Tool	An artifact used to perform a particular function to aid training/exercise or provide training/exercise itself. Used interchangeably with the term product in this report.
Whole-task training	Training a complex set of tasks as a whole rather than training each separately.

WMD competency levels

The formal levels of competency traditionally associated with WMD training. They consist of: 1) Awareness; 2) Performance (sometimes referred to as Performance-A); 3) Technician (sometimes referred to as Performance-B, or Specialty); and 4) Planning and Command (sometimes these are separated).

ABBREVIATIONS AND ACRONYMS

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2-D	Two-dimensional
3-D	Three-dimensional
AAR	After Action Review
ADASHI	Automated Decision Aid System for Hazardous Incidents
ADFR	ADASHI First Response Automated Decision Aid System for Hazardous Incidents
ADPR	ADASHI Professional Automated Decision Aid System for Hazardous Incidents
AEAS	Automated Exercise and Assessment System (AEAS)
BWRT	Biological Weapons Response Template
BSMR	BioSimMER
CATS-JACE	Consequences Assessment Tool Set - Joint Assessment of Catastrophic Events
CD	Compact Disc
CD-ROM	Compact Disc-Read Only Memory
CERRTS	Civil Emergency Reaction and Responder Training System
CJJC	Consequences Assessment Tool Set - Joint Assessment of Catastrophic Events (CATS-JACE)
CRTS	Civil Emergency Reaction and Responder Training System (CERRTS)
CAP	Corrective Action Plan
CBRNE	Chemical, Biological, Radiological, Nuclear, Explosive
CBT	Computer Based Training
COTS	Commercial off-the-shelf
DHS	Department of Homeland Security
DoD	Department of Defense

DOE	Department of Energy
DOJ	Department of Justice
DP	Domestic Preparedness
DSS	Decision Support System
DTRA	Defense Threat Reduction Agency
EGLD	Eagle Defender
EMA	Emergency Management Agency
EMS	Emergency Medical Services
EOC	Emergency Operations Center
ERSM	Emergency Response Synchronization Matrix
ETM	E Team
F2F	Face-to-face
FD	Fire Department
FE	Functional Exercise
FEMA	Federal Emergency Management Agency
FiRST	First Responders Situational Awareness Tool
FRST	First Responders Situational Awareness Tool (FiRST)
FS2	Fire Studio 2.0
FSE	Full Scale Exercise
GA	Government Administrator
GAMMA-EC	Gaming and Multimedia Applications for Environmental Crisis Management Training
GEC	Gaming and Multimedia Applications for Environmental Crisis Mgt. Training (GAMMA-EC)
GF	Guard Force
GIS	Geographic Information System
GOTS	Government off-the-shelf

GPS	Global Positioning System
GRV	Groove
GUI	Graphic User Interface
HazMat	Hazardous Materials
HC	Health Care
HLA	High Level Architecture
HPAC	Hazard Prediction and Assessment Capability
HYP	Hybrid Particle And Concentration Transport Model (HYPACT)
HYPACT	Hybrid Particle And Concentration Transport Model
ICS	Incident Command System
ISD	Instructional Systems Development
JANS	JANUS (Natl. Guard Version)
JCAT	Joint Conflict and Tactical Simulation (JCATS)
JTLS	Joint Theater Level Simulation
LE	Law Enforcement
LLV	LifeLine Videos
MIDA	Meteorological Information and Dispersion Assessment System - Anti-Terrorism (MIDAS-AT)
MIDAS-AT	Meteorological Information and Dispersion Assessment System - Anti-Terrorism
MINV	Minerva
MMTE	Mass-Casualty Medical Training and Evaluation (MMT&E)
MS&G	Models, Simulations, and Games; used interchangeably with media in this report.
N/A	Not Applicable
NSN	National Security Network
NIMA	National Imagery and Mapping Agency

ODP	Office for Domestic Preparedness
OPSC	OpsCenter
PC	Personal Computer
PEGM	PEGEM
PH	Public Health
PW	Public Works
PPE	Personal Protective Equipment
PSC	Public Safety Communications
QUIC	Quick Urban and Industrial Complex Dispersion Modeling System
RAM	RAMSAFE
RAMS	Regional Atmospheric Modeling System
RIFS	Response Information Folder System
RRP	Rational RequisitePro
S3	S3-Exercise
SBCCOM	U.S. Army Soldier and Biological Chemical Command
SEAS	SEAS/Homeland Security Simulation
SLRY	San Louis Rey
SME	Subject Matter Expert
SOFR	SoftRisk
SOP	Standard Operating Procedure
SPCM	SPECTRUM
STC	STAT Care
SVZC	SimViz 3400ICS - Custom
SVZS	SimViz 3400ICS - Standard
SVZT	SimViz 3400ICS - Tailored
T&E	Training and Exercise

TLI	ThoughtLink, Inc.
TOPOFF	Top Officials Exercise
TTR	TUTOR
TTX	Table Top Exercise
VCIT	Virtual Cities
VTC	Video Teleconference
WDAC	Weapons of Mass Destruction Decision Analysis Center (WMD-DAC)
WEOC	WebEOC
WMD	Weapons of Mass Destruction
WMD-DAC	Weapons of Mass Destruction Decision Analysis Center

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